

**ULTIMATE FRISBEE PLAYERS:
PLAYING HIGHLY COMPETITIVE
WITH GOOD SPIRIT**

**Universidade Lusófona de Humanidades e Tecnologias
Faculdade de Educação Física e Desporto**

**Lisboa
2022**

**ULTIMATE FRISBEE PLAYERS:
PLAYING HIGHLY COMPETITIVE
WITH GOOD SPIRIT**

**Universidade Lusófona de Humanidades e Tecnologias
Faculdade de Educação Física e Desporto**

**Lisboa
2022**

Acknowledgements

What a journey, the time has finally come, thesis is ready, many important people that helped me succeed both directly and indirectly during my doctoral studies. I have appreciated all of the emotional support shown to me in the form of enthusiasm for my work, questions, even doubts about my progress, and the enormous amounts of time dedicated to helping me succeed over the last years.

First, I would like to thank my supervisor, Prof. Dr. João Valente-dos-Santos (JVS) for the continuous support and attention to details. Always extremely committed to overseeing my progress on this PhD project providing a variety of scientific, professional, and personal challenges. I would like to thank you for the opportunities that you saw and have always offered me. Your sharp questions on my ideas. Your feedback that was always meant to make it better, but what I once thought of how do I continue? Yet it was always there believed you had in me to be able to do this and that was nice. From graduation to we were allowed to do a PhD together. Thanks for that!

Co-authors and friends: impossible without co-authors. I owe a lot to you. It read along critically and analyze. It didn't always get easier off, but better through. Prof. Dr. Luís Calmeiro (LC), Prof. Dr. Raul Antunes (RA), Prof. Dr. Ricardo Rebelo Gonçalves (RRG), Prof. Dr. Pedro Teques (PT) and Prof. Jay Coakley (JC). Professor Guilherme Furtado (GF) provided me constant encouragement, sound advice, and ideal scientific conditions throughout my worst periods. Prof. Dr. (JC), whose career and accomplishments are outstanding and unparalleled by many in our field, provided a valuable supervision since the first contact. His supportive, cordial, and straightforward attitude to this research project must be emphasized and was strongly appreciated. I feel genuinely honored at having the opportunity to work with all my supervisors.

Would like to highlight Prof. Dr. Francisco Carreiro da Costa, Prof. Dr. Jorge Proença Prof. Dr. Luís Bom and Prof. Dr. Carlos Gonçalves for the friendship, academic support, and voluntary help. Also, to MHSc Nuno Fontes Silva for the help on conducting the videos assessments, the friendship and subtle style.

Special thanks are extended to Prof. Dr. David Silva, Prof. Dr. Diogo Monteiro, Prof. Dr. Isabel Varregoso, MSc João Cruz, Prof. Dr. Luís Coelho, Prof. Dr. Marisa Barroso, Prof. Dr. Nuno Amaro, Prof. Dr. Paula Simões, Prof. Dr. Pedro Morouço, MSc Rogério Salvador, Prof. Dr. Rui Matos and Prof. Rui Silva. Without my sweet talent colleagues, I could not have accomplished this. You were there when it was busy to combine everything, when I didn't see

it anymore sitting, but also when the articles were accepted. I could rely on you. You were also often part of my promotion evasive behavior. A special thanks to Rui Lobo. Without you, this thesis would not have become so sleek and beautiful.

Thank you to my present colleagues of Leiria Flying Objects (LFO), National Ultimate and disc sports Association (APUDD) and World Flying Disc Federation (WFDF) for taking a chance and hiring me to join projects around #frisbeelifestyle.

Special thanks to Volker Bernardi (WFDF) for your ongoing support and patience as I finished my doctoral work at European Beach Ultimate Championship. To Manuel Leiria the number of hours, patience, and friendship. Impossible not to talk about all members of Leiria Flying Objects, many thanks GO GO LFO!!!

To my friends that helped me across this research, always present when I desperately needed to get some relaxation and reflection create moments. Delicious lunch, dinner, chat, chat with red wine or beer. Those moments were important and helped make me who I am now. But often I wanted not at all talking to you about work, but about everything else that me engaged. Fortunately, we could, and we can do that very well. Thank you Carlos Barroqueiro, José Ricardo, José Pedro Zúquete, Nuno Fabião. Special words to Becas for all the musics, revisions, and friendship.

To my mother-in-law, I would like to show my gratitude.

To my parents, without your support, I don't think I would be on this topic got true. You gave me the opportunity to study abroad and gave me a try let my talents develop as well as possible. You are always interested in how things were going and proud of what I was and am doing. Not to mention too often having to say that there was no change in progress yet, decided we that you could only ask about it once a month and that was a nice one approach. Now that is disappearing, but over the years we only have good things for it got back. I am proud that we can celebrate this milestone together, thank you well!

To my sister and brother-in-law, no words to explain the constant encouragement, enthusiasm, simplicity and tending attitude are remarkable and inspiring. Thanks!

Lastly, and the most important, special thanks Catarina my lovely wife, and to my two lovely daughters Bárbara e Madalena. I will never be able to reattribute the overtime work, as well as the weekends and holidays that we did not enjoy, I dedicate this publication to you!

Thanks4all.

Resumo

A presente tese está organizada em três partes, sendo que o objetivo geral deste trabalho passa por melhorar a o entendimento das variáveis que caracterizam os atletas de Ultimate Frisbee (UF), com especial ênfase na interação entre o espírito de jogo (SOTG) e o nível competitivo, considerando uma abordagem multidisciplinar.

A parte I apresenta uma breve introdução ao UF, informações sobre o perfil dos jogadores de UF e uma perspectiva geral da investigação científica realizada em torno do UF. A Parte II inclui duas revisões sistemáticas (RS): *(i)* Trabalho de Equipa: Uma Revisão Sistemática das implicações dos construtos psicossociais na investigação e prática dos jogos de UF; *(ii)* Trabalho de equipa, SOTG e comunicação: Uma revisão das implicações dos construtos sociológicos na investigação e prática dos jogos de UF; e dois estudos transversais: *(iii)* Orientações disposicionais em atletas competitivos de UF; e, *(iv)* Jogadores de UF: Características de acordo com o seu nível competitivo e SOTG. Estes dois últimos estudos estão relacionados com o European Beach Ultimate Championship (EBUC).

As duas RS mostram que: *(i)* os objetivos de grupo e a promoção de trabalho de equipa, mostraram-se preditores significativos da coesão social. Adicionalmente, o trabalho de equipa e a coesão em torno da tarefa tende a ser mediada pela comunicação e conhecimento do jogo e das suas regras, dado que são características predominantes num dos poucos desportos que é auto-arbitrado. Identificaram-se diferenças na perceção dos jogadores sobre o jogo através da utilização da folha de SOTG, sendo este fator indicado como o mais diferenciador.; *(ii)* e que a criação de dinâmicas sociais positivas entre os jogadores favorece as dinâmicas sociais positivas entre os atletas de UF.

No que diz respeito aos estudos transversais, concluímos que: *(i)* a elevada orientação para a tarefa dos atletas de UF aparece associada ao aumento do sucesso no controlo de tarefas e na melhoria das competências pessoais; *(ii)* as diferentes divisões de UF mostraram diferentes orientações disposicionais (a divisão mista apresentou a pontuação mais elevada de orientação para a tarefa, enquanto a divisão master feminina apresentou o valor relativo mais elevado para a orientação para o ego); *(iii)* Para a subescala de tarefa, as divisões femininas, masculinas e mistas obtiveram os resultados mais elevados; *(iv)* Não se identificou uma variação significativa, associada ao sexo, na idade cronológica, experiência desportiva, número de treinos semanais, ranking mundial das equipas que representam por país, número de jogos disputados no EBUC, classificação geral e classificação associada ao SOTG (conhecimento das regras, evitar

o contacto físico, imparcialidade, atitude positiva, comunicação), orientação para a tarefa e ego. O nível competitivo mostrou-se uma fonte de variação na idade cronológica, experiência desportiva, indicadores de treino, variáveis resultantes do EBUC e orientação para a tarefa. A interação entre nível de SOTG e nível competitivo, também se mostrou um fonte consistente de variação entre os jogadores de UF, para todas as variáveis.

A parte III da tese, compreende a discussão geral, na qual os resultados dos quatro estudos são resumidos e contextualizados e as suas implicações práticas são discutidas. O presente trabalho permitiu-nos compreender o impacto da SOTG a nível competitivo, expandindo o nível de conhecimento em torno das diferenças que caracterizam os atletas das diferentes divisões de UF. Além disso, o sexo não se mostrou uma fonte consistente de variação entre jogadores competitivos de UF, e a interação entre o nível SOTG e o nível competitivo permitiu uma interpretação crítica da variação entre os jogadores de UF para a experiência desportiva, indicadores de treino, variáveis resultantes do EBUC e orientações disposicionais.

Palavras-chave: Desporto Coletivo; Disco Voador; Espírito de Jogo; Trabalho em Equipa; Desportivismo; Competição; Auto-arbitragem; Teoria dos Objetivos de Realização; Comunicação; Motivação; Psicologia do Desporto, Sociologia do Desporto.

List of Abbreviations

- AGT** - Achievement Goal Theory
ANOVA - Analysis of Variance
APUDD - National Ultimate and disc sports Association
BW - Behaviors and Welfare
CA - Chronological Age
CF - Cooperation and Friendship
CHS - Columbia High School
CO - Communication
DTLI - Differentiated Transformational Leadership Inventory
EBUC - European Beach Ultimate Championship
EL - Environment and Lifestyle
EJ - Enjoyment
LFO - Leiria Flying Objects
MAXQDA - Powerful computer-assisted qualitative data analysis software (CAQDAS)
PC - Performance and Competition
PE - Physical Education
PICO - Patient/Population, Intervention, Comparison and Outcomes
POSQ - Perception of Success Questionnaire
PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses
QSR - Qualitative Systematic Review
RSR - Rules and Self- refereeing
SDT - Self-determination theory
SE - SOTG and Ethical
SECTS-B - Scale for Effective Communication in Team Sports-British
SOTG - Spirit of the Game
SPSS - Statistical Package for the Social Sciences
SR - Systematic Review
STROBE - Strengthening Reporting of Observational studies in Epidemiology
TEOSQ - Task and Ego Orientation in Sport Questionnaire
TSS - Teamwork and Social Skills
UF - Ultimate Frisbee

UPA - Ultimate Players Association

USA - United States of America

WFDF - World Flying Disc Federation

Table of Contents

Acknowledgements	5
Resumo	9
List of Abbreviations	13
List of Tables	23
List of Figures	27
PART 1	29
General Introduction	31
1.1. Ultimate frisbee	31
1.2. Profile of Ultimate Frisbee Players	34
1.3. Research in UF	34
1.4. Objective and outline	35
References	37
Introdução Geral	41
1.1. Ultimate frisbee	41
1.2. Perfil dos melhores jogadores de UF	43
1.3. Investigação no UF	44
1.4. Objetivo e Organização da Tese	45
Referências	47
PART 2	51
Chapter 1 STUDY I	53
Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games	55
Abstract	55
1. Introduction	56
2. Methods	58
2.1. Description of main concepts	58
2.2. Pilot search	59
2.3. Search strategy	60
2.4. Selected manuscripts criteria	61
2.5. Data extraction	61
2.6. Quality of assessment	62
2.7. Data analysis and risk of bias	64

3. Results	64
3.1. Results of meta-search	64
3.2. General characteristics of selected studies	64
3.3. Specific characteristics of selected studies	66
3.4. Description of excluded studies	68
4. Discussion	68
5. Conclusion	71
6. References	72
Chapter 2 STUDY II	79
Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games	81
Abstract	81
1. Introduction	82
2. Materials and Methods	84
3. Results	88
4. Discussion	91
5. References	93
Chapter 3 STUDY III	99
Dispositional Orientations in Competitive Ultimate Frisbee Athletes (Clima Motivational en Ultimate Frisbee)	101
Abstract	101
Resumo	102
Resumen	103
1. Introduction	104
2. Methods	106
2.1. Sample	106
2.2. Procedures	108
2.3. Instruments	108
2.4. Statistical analysis	109
3. Results	109
4. Discussion	110
5. Conclusion	113
6. References	114
Chapter 4 STUDY IV	121
Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game	123
Abstract	123

1. Introduction	124
2. Methods	126
2.1. Participants	126
2.2. Instrumentation	127
2.3. Procedures	128
2.4. Principal component analysis and hierarchical classification	128
2.5. Statistical analysis	128
3. Results	129
4. Discussion	136
5. Conclusions	139
6. References	140
PART 3	145
General Discussion and Conclusions	147
General Discussion	149
1.1. Aim of the thesis	149
1.2. Results highlights	150
1.3. Recommendations for future research	152
1.4. Recommendations for practice	152
References	153
Discussão Geral	149
1.1. O objetivo da tese	157
1.2. Os resultados importantes	158
1.3. Recomendações para a investigação futura	160
1.4. Recomendações para a prática	161
Referências	162
Appendix A	165
Spirit of the Game (SOTG)	167
Appendix B	187
1. Ethics Committee	189
2. TEOSQ	190
3. POSQ	191
4. WFDF and BULA	192
Appendix C	195
1. WFDF and BULA	197
Appendix D	199
1. Spirit Captains	201
2. Questionnaires	203

Appendix E	207
1. MDPI	209
2. Frontiers	210
3. Cuadernos del deporte	211
4. PLOS ONE	212
Appendix F	215
Curriculum Vitae	217
1. Personal and Professional Data	217
1.1. Personal data	217
1.2. Academic degrees	217
1.3. Social Skills	218
1.4. Organization Skills	218
1.5. Previous and current scientific and professional activities	218
2. Research	221
2.1. Books and E-books	221
2.2. Chapters in books	221
2.3. Articles in peer review international journals	221
2.4. Articles in peer review national journals	222
2.5. Oral Communications/Posters	222
2.6. Abstracts in international conference proceedings	222
2.7. Reviewer in international journals	223
2.8. Mediator in Congress	223
2.9. Erasmus Projects	223
3. Teaching	224
3.1. Teaching service in higher education	224
3.2. Teaching service in primary education	224
4. Transfer and use of Knowledge	224
4.1. National Oral communications/ workshops/ Courses for teacher's and coaches	224
4.2. International oral communications/ workshops/ Courses for teacher's and coaches	226
5. Sports Experience	227
5.1. Career as an athlete	227
5.2. Coaching habilitations	227

List of Tables

Chapter 1 STUDY I

Teamwork: a review of implications from Psychosocial constructs for research and practice in performance of Ultimate Frisbee game

Table 1 - Search terms used depending on the different databases and the number of articles generated in the pilot search.

Table 2 - Presentation of the characteristics of the studies included in the review according to of adapted PICOS guidelines.

Table 3 - Quality assessment of selected papers using STROBE - combined check-list.

Table 4 - Summary of reviewed studies.

Chapter 2 STUDY II

Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games

Table 1 - Search terms used depending on the different databases and the number of articles generated in the pilot search.

Table 2 - Methodological characteristics of the included studies in the review (n=9).

Table 3 - Methodological interpretation of the included studies in the review (n=9).

Chapter 3 STUDY III

Clima Motivacional en Ultimate Frisbee - (Dispositional orientations in Competitive Ultimate Frisbee athletes

Table 1 - Number of participants per sex and UF division (n=484).

Table 2 - Descriptive statistics for chronological age and training information for the total sample.

Table 3 - Descriptive statistics and internal consistency of the POSQ subscales for the total sample.

Table 4 - Means and standard deviations by UF divisions on the subscales of POSQ and results of ANOVAs.

Chapter 4 STUDY IV

Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game

Table 1 - Cross-tabulations (absolute and relative frequencies) of UF players by SOTG level and sex (upper) and Competitive level (lower).

Table 2 - Means and standard deviations by sex, competitive level and SOTG level.

Table 3 - Results of ANOVA to test the effects of sex, competitive level, SOTG level, the interaction term SOTG Level x Sex and the interaction term SOTG Level x Competitive level.

Table 4 - Means and standard deviations by SOTG level within competitive level.

Table 5 - Relationship of high SOTG level with age, UF experience, national team experience, weekly training sessions and volume, country world ranking, EBUC games played and classification, and motivational climate measures, in the total sample and by competitive level.

Table 6 - Summary of stepwise discriminant analyses of UF players by SOTG level (High and Regular) in the total sample and by competitive level.

List of Figures

Chapter 1 STUDY I

Teamwork: a review of implications from Psychosocial constructs for research and practice in performance of Ultimate Frisbee game

Figure 1 - Flowchart of studies included following PRISMA guidelines.

Chapter 2 STUDY II

Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games

Figure 1 - Flowchart of studies included following PRISMA guideline.

Figure 2 - Conceptual map of interconnection between emerged categories.

Chapter 4 STUDY IV

Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game

Figure 1 - Summary of participants characteristics.

Figure 2 - Summary of logic model.

Chapter 5 STUDY V

General Discussion

Figure 1 - Thesis model.

PART 1

General Introduction

The first section of this thesis provides a brief introduction to Ultimate Frisbee (UF), followed by information about the profile of UF players and a general overview of research devoted to UF. The second section includes two Systematic Reviews (SRs) and two cross-sectional studies that explain the following aspects of UF: *(i)* Teamwork: A Systematic Review of Implications From Psychosocial Constructs for Research and Practice in the Performance of Ultimate Frisbee Games; *(ii)* Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games; *(iii)* Dispositional Orientations in Competitive Ultimate Frisbee Athletes; and, *(iv)* Ultimate Frisbee Players: Characteristics According to Their Competitive Level and Spirit of the Game.

1.1.Ultimate frisbee

The goals of the *World Flying Disc Federation* (WFDF) through 2023 is to describe its vision and values and its seven core strategies that include the following:

Strategy 1: Promote the “frisbee lifestyle;”

Strategy 2: Pursue inclusion in the Olympic Program and Other Multi-Sports Games.

Strategy 3: Support member associations in promoting youth development as path to growth.

Strategy 4: Build the audience by increasing the entertainment value of disc sports competitions.

Strategy 5: Showcase Spirit of the Game as an essential element of disc sports.

Strategy 6: Ensure the well-being of our athletes and our sport and encourage gender equality and diversity in all aspects.

Strategy 7: Optimize organizational effectiveness and efficiency) and the tactics for achieving them, with the goal of building upon the progress made since 2011.

The underlying message of these strategies is to encourage disc sports as a lifetime that can be played by people of all ages and abilities. Most important are: promoting the “frisbee lifestyle;” pursuing inclusion in the Olympic program and other multi-sport games; supporting member associations in promoting youth development as path to growth; building the audience by increasing the entertainment value of disc sports competitions; showcasing the Spirit of the

Game (SOTG) as an essential element of disc sports; ensuring the well-being of athletes and encouraging sex equality and diversity in all aspects of UF; and, optimizing organizational effectiveness and efficiency.

The pursuit of inclusion in the Olympic program, with a target date of Los Angeles 2028, is not a goal unto itself but part of the holistic approach chosen to popularize flying disc sports. Olympics participation would provide the visibility and credibility to support WFDF objectives (WFDF, 2019); for example, to encourage participation and viewing of flying disc sports at all levels, from grass roots participation as a leisure time activity up to the highest levels of elite competition, for both men and women. To achieve this, it is important to pay attention to research on UF and its characteristics, especially the SOTG.

The present study on competitive UF was conducted at the Life Quality Research Center (CIEQV) of the Polytechnic Institute of Leiria and at the Centro de Investigação em Desporto, Educação Física e Exercício e Saúde (CIDEFES) of the Lusófona University and is one of many projects that fulfil the above-mentioned objectives.

The rationale of reflecting upon UF and SOTG leads to important insights and additions to knowledge to teachers', coaches across various topics in the world of sports. In places, this could give opportunities for academics and researchers to engage that understanding in more effective tactics for disseminating research that can facilitate social change and activism (Coakley, 2015).

An exploration of UF requires a brief look at the history of the sport. After controversy about its origins, most people agree that it was inspired by William Russell Frisbie of Bridgeport, Connecticut, USA (Johnson, 1975; Malafronte, 1998; Iocovella, 2004; Leonardo and Zagoria, 2004). The sport of UF was conceived in 1967 in the United States of America (USA), by Joel Silver and then introduced it in 1968 to the Columbia High School (CHS) student council in Maplewood New Jersey, USA (Seidler, 2005). The first game was played between two groups of students in 1969, a time during which many young people were attracted to alternative lifestyles and experimental and communal living as expressed through dress, drugs, and music (Heale, 2001). The first two editions of rules were written by CHS student Buzzy Hellring and later refined by Silver and John Hines. Pondering the values and behaviors that came to represent the counterculture, which was at its height in 1967 during what was termed the Summer of Love (Farrell, 1997), Silver and members of both the student newspaper, *The Columbian*, and the Student Council began to play a modified game of Frisbee football (Johnson, 1975; Malafronte, 1998).

The first complete characterization of the UF including general and specific rules, equipment, time, scoring, game variations, and other characteristics was described by Clark,

Hamilton and Bowden (1981). They described UF as an alternative to team ball sports in physical education and linked it to a pedagogical sequence (called Ultimate Curriculum) for introducing this new sport modality within US schools (Caporali, 1988). As sport games may provide benefits, beyond fitness, such as more motivation, although affect was not measured. Participants were rather skilled and could maintain high activity, which might not have been true for less skilled or younger persons (Hannon and Pellett, 1998). The attempt to promote sport has led some experts to highlight its qualities regarding the development of cognitive, psychomotor, and affective skills at different levels, in addition to cardiovascular fitness (Caporali, 1988; Clark et al., 1981).

Currently, the UF is known simply as 'Ultimate' to participants, and referred to as such hereafter in this report, is a fast-paced, non-contact, mixed team sport played with a flying disc or frisbee (Griggs, 2011). It brings together features of invasion games, such as American football and netball, with the result being a simple yet demanding game (Spencer-Cavaliere et al., 2017).

In 2020, the physical activities in which frisbee disks are used have become part of a lifestyle, as evidenced by the hashtag #frisbeelifestyle (WFDF, 2020). At the same time, UF is one of the disc sports that the WFDF now promotes worldwide. The WFDF is the international sports federation responsible for world governance of flying disc (frisbee) sports, including Ultimate, Beach Ultimate, Disc Golf, Freestyle, Guts, and various Individual Events. It consists of 103 member associations that represent flying disc sports and their athletes in more than 100 countries. The WFDF is recognized by the International Olympic Committee (IOC), the International Paralympic Committee (IPC), the International University Sports Federation that is a member of the Global Association of International Sports Federations, the Association of IOC Recognized International Sports Federations, the International World Games Association, the International Masters Games Association, and the Association for International Sport for All. The WFDF also is a signatory to the World Anti-Doping Code and is a registered not-for-profit corporation in the state of Colorado, USA.

In terms of official membership, the country with the largest number of associates is the USA, followed by Canada, Australia, Germany, Great Britain, and Japan. Women comprise 37.8% of competitive frisbee players (WFDF, 2020). Spirit of the game, passion, community, and inclusiveness are the WFDF's stated values (WFDF, 2020). According to the latest data, Portugal has approximately 500 heterogeneous practitioners who practice Ultimate Frisbee, Disc golf, Freestyle, and Double disc court in a playful and competitive way, in contact with nature, on the beach, on grass, and always with fair play (Amoroso & Varregoso, 2015).

1.2. Profile of Ultimate Frisbee Players

The personality profile of the UF players resembles the profile of players practicing similar sports. Female UF players appeared to experience more negative emotions and psychological stress than their male peers, but this is attributable to the gender role stereotypes that influence many female athletes that play competitive sports. Overall, those who play UF have a basic movement profile similar to that of players in other team sports; additionally the activity profile and cardiovascular loading during a competitive game of UF are characterized as an high-intensity intermittent activity with large amounts of high-intensity running and sprinting and a high cardiovascular loading with heart rates (HR) higher than 90% of maximum HR for more than half of the game (Krustrup & Mohr, 2015). The greater physiological demands encountered during mixed-gender game play is likely due to underlying gender-mediated cardiovascular differences. Although more research is needed, the existing data appear to support the efficacy of UF as a prescriptive exercise tool for health benefits (Scanlan et al., 2015).

1.3. Research in UF

A review of published scientific articles about UF indicates that there have been few studies that focus on collective performance and Spirit of the Game (SOTG).

Understanding how team sports can become more cohesive is an important topic for researchers and sport psychology practitioners alike (Smith et al., 2013). Existing research in applied sport psychology suggests that those who play UF have personality profiles similar to players in other team sports (Piepiora et al., 2020). However, a study that used qualitative research methods revealed that the unique forms of cooperation that exist among players in UF is the result of a regulatory and enforcement approach in which norms during competition are enforced informally at a local level based on a combination of self-discipline and concerns about the reputations of players and teams (Robbins, 2012). The national governing body becomes involved only when there are contentious disputes that are not easily settled at the local level. As a result, UF players take it upon themselves to explain to rookies exactly what is acceptable on the field and what is not (Griggs, 2011). However, Spencer-Cavaliere, Kingsley, and Gotvals (2017b) argue that despite UF's claims to being an alternative sport, competitive youth leagues have some of the same problems that exist in traditional youth sport programs. Because research on UF is scarce, little is known about the dynamics of competition and the factors that are related to winning and losing in competitions (Lam et al., 2021).

Due to the fast growth of UF and the number of people participating in the sport, there has been a recent increase in research in the field of sports sciences (and other areas). This research has focused on the following topics:

- (i) physical, cardiovascular, and metabolic demands in health adults and athletes (Krustrup & Mohr, 2015; Leicht et al., 2019; Weatherwax et al., 2015);
- (ii) the gender differences among UF practitioners of school and university levels (Neville, 2019; Piepiora et al., 2020);
- (iii) sociological analysis of the UFC associated to the rules, ethics and competitiveness among UF practitioners (Crocket, 2015, 2016; Griggs, 2009);
- (iv) biomechanics of the launch, disc trajectory and injury prevention (Akinbola et al., 2015; Koeble & Seiberl, 2020).

The issue of SOTG was a central theme throughout the informative book, *ULTIMATE--The First Four Decades*, by Pasquale Anthony Leonardo and Adam Zagoria, published by Joe Seidler in 2005. This publication provides a detailed history of UF from its origins in 1968 through 2005. Note that, despite the level of concern about the purity of the original principles of Ultimate, the founders at (CHS) fully expected that referees would be used if Ultimate became a popular sporting which there were matches and tournaments in which winning was an important goal. Further, while observers (that is, referees) are now used at the top levels of competition in North America, most games at other levels of competition are still played without referees and most North American Ultimate players would say that the spirit of the game remains alive and well (Rauch, 2005) in the sport. Worldwide, UF continues to be primarily a self-refereed team sport. Therefore, there is an emphasis on teaching all players that the SOTG is essential and that rules must be respected and self-enforced. Awareness of the SOTG and understanding the rules is important for every player if the integrity of the sport is to be preserved (Amoroso, 2020).

Méndez-Giménez et al. (2015) found that the SOTG dimension is strongly associated with other psychological domains, such as sportsmanship, social goals, and friendship. A qualitative study by Robbins (2012) revealed that cooperation in UF is the result of the sport being federated and to promote informal regulation of competitions through norms, reputations, and self-discipline, more experienced.

According to the latest studies related to UF, we noticed that there is a demand for answers related to the game. However, with the reviews we found that something that characterizes the modality (self-arbitration and the spirit of play, remains understudied.

1.4. Objective and outline

From the outset one of our goals was to understand and explore the ethical and fair-play concepts of elite Ultimate Frisbee (UF) practitioners and identify the importance of Spirit of the Game (SOTG) for elite UF practitioners. Hence the Research Questions:

- What is the goal orientation of elite UF players?
- Does EBUC participants show a good Spirit?

To answer these questions, different studies will be summarized in this thesis:

Chapter 1: Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games.

Chapter 2: Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games.

Chapter 3: Dispositional Orientations in Competitive Ultimate Frisbee athletes (Climate Motivational en Ultimate Frisbee).

Chapter 4: Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game.

The purpose of this thesis is to gain deeper insight into the perspectives of ultimate frisbee players as they engage in competition and take into account the spirit of the game (SOTG).

Chapter 1 focuses on developing good spirit in UF players. It investigates the psychological factors that influence how the game is defined and played. It also examines the content of quantitative studies to determine if and how the unique characteristics of UF are related to four psychological themes that may be identified during game play.

Chapter 2 has the same aim as chapter 1 but on focuses Sociological dimensions. Chapter 3 focuses on the dispositional orientations among competitive Ultimate Frisbee athletes. The methodological approach in this chapter focused on isolating the impact of the following variables: age, gender, experience, training volume, or coach-created motivational climate). Finally, it is noted that future research is needed to extend the current study by examining the effects of team competition on SOTG and performance as a function of group size, with the same or larger groups than employed here.

Chapter 4 focuses on the Spirit Of The Game and how the characteristics of players and their competitive level influences a commitment to the SOTG. This study investigates how UF players present their SOTG values according to their competitive level, as well as the possible differences between sexes.

In the third Part of this thesis, the results of the different studies are combined into a general discussion and conclusions are drawn for the possible practical translation for coaches, players, physical education teachers and people related to the world of sport and social sciences.

References

- Akinbola, M., Logerstedt, D., Hunter-Giordano, A., & Snyder-Mackler, L. (2015). Ultimate frisbee injuries in a collegiate setting. *International Journal of Sports Physical Therapy*, 10(1).
- Amoroso, J. (2020). *Ultimate at Schools Program Teachers File - for Physical Education Teachers (primary to secondary school)*. 1st edition, WFDF. World Flying Disc Federation. Colorado Springs, United States of America. ISBN 978-3-00-065900-3. 1 (6), 61-68.
- Amoroso, J., & Varregoso, I. (2015). Ultimate frisbee: Um desporto de futuro, em contacto com a natureza. *E-Balonmano.Com: Revista de Ciencias Del Deporte*, 11(3), 175–176.
- Caporali, J. M. (1988). The Ultimate Alternative. *Journal of Physical Education, Recreation & Dance*, 59(7), 98–103. <https://doi.org/10.1080/07303084.1988.10606264>
- Carpenter, E. J. (2010). *The tactical games model sport experience: An examination of student motivation and game performance during an ultimate frisbee unit*. 1–307. http://search.proquest.com/docview/911148911?accountid=9851%5Cnhttp://tf5lu9ym5n.search.serialssolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rft_id=info:sid/Physical+Education+Index&rft_val_fmt=info:ofi/fmt:kev:mtx:book&rft.genre=book&rft
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, 52(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Coakley, J. (2015). Assessing the sociology of sport: On cultural sensibilities and the great sport myth. *International Review for the Sociology of Sport*, 50(4–5), 402–406. <https://doi.org/10.1177/1012690214538864>
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, 52(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal*, 32(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Crocket, H. (2016). An ethic of indulgence? Alcohol, Ultimate Frisbee and calculated hedonism. *International Review for the Sociology of Sport*, 51(5), 617–631. <https://doi.org/10.1177/1012690214543960>
- Griggs, G. (2009). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society*, 12(10), 1317–1326. <https://doi.org/10.1080/14747600903281111>

- org/10.1080/17430430903204827
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society*, 14(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Hannon, J. C., & Pellett, T. L. (1998). Between Sport Games and Traditional Cardiovascular Activities’. *Prevention*, 1453–1454. <https://doi.org/10.2466/pms.1998.87.3f.1453>
- Heale, M. J. (2001). *The sixties in America: history, politics and protest*. Dearborn Trade Publishing.
- Johnson, S. E. (1975). *Frisbee: a practitioner’s manual and definitive treatise*. Workman Publishing Company.
- Koeble, C., & Seiberl, W. (2020). Functional Adaptations in Isokinetic Performance and Shoulder Mobility in Elite Ultimate Frisbee Players. *Sportverletzung · Sportschaden*. <https://doi.org/10.1055/a-1023-4983>
- Krustrup, P., & Mohr, M. (2015). Physical Demands in Competitive Ultimate Frisbee. *Journal of Strength and Conditioning Research*, 29(12), 3386–3391. <https://doi.org/10.1519/JSC.0000000000000989>
- Lam, H., Kolbinger, O., Lames, M., & Russomanno, T. G. (2021). State Transition Modeling in Ultimate Frisbee: Adaptation of a Promising Method for Performance Analysis in Invasion Sports. *Frontiers in Psychology*, 12(May), 1–12. <https://doi.org/10.3389/fpsyg.2021.664511>
- Leicht, A., Connor, J., Doma, K., & Sinclair, W. (2019). Cardio-respiratory demands of Ultimate Frisbee in elite male athletes during a national championship. *Journal of Science and Medicine in Sport*, 22(2019), S64. <https://doi.org/10.1016/j.jsams.2019.08.267>
- Leonardo, P. A., & Zagoria, A. (2005). *Ultimate: The first four decades*. Joe Seidler.
- Malafrente, V. A. (1998). *The complete book of Frisbee: The history of the sport & the first official price guide*. Amer Trends Publishing Company.
- Méndez-Giménez, A., Fernández-Río, J., & Méndez-Alonso, D. (2015). Original Sport Education Model Versus Traditional Model : Effects on Motivation and Sportsmanship Modelo De Educación Deportiva Versus Modelo Tradicional : Efectos En La. *Revista Internacional de Medicina y Ciencias de La Actividad Física y Del Deporte*, 59, 449–466. <https://doi.org/10.15366/rimcafd2015.59.004>
- Neville, J. (2019). Dressed to play: An analysis of gender relations in college women’s ultimate Frisbee. *International Review for the Sociology of Sport*, 54(1), 38–62. <https://doi.org/10.1177/1012690217712503>
- Piepiora, P., Sadowska, M., & Supiński, J. (2020). The personality profile of ultimate frisbee players based on gender. *Quality in Sport*, 5(4), 28. <https://doi.org/10.12775/qs.2019.022>
- Profile, S. E. E. (2020). *Ultimate at Schools Program Teachers File - for Physical Education Teachers* (primary to secondary school). July.
- Rauch, R. L. (2005). *A History of the Spirit of the Game and Observers in the Sport of Ultimate*. 1–8. <https://wfdf.sport/history/history-of-sotg/>
- Robbins, B. G. (2012). Playing with fire, competing with spirit: Cooperation in the sport of ultimate. *Sociological Spectrum*, 32(3), 270–290. <https://doi.org/10.1080/02732173.2012.663713>
- Scanlan, A. T., Kean, C. O., Humphries, B. J., & Dalbo, V. J. (2015). Physiological and fatigue responses associated with male and mixed-gender ultimate frisbee game play. *Journal of Strength and Conditioning Research*, 29(9), 2600–2607. <https://doi.org/10.1519/JSC.0000000000000900>
- Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise*, 14(2), 249–257. <https://doi.org/10.1016/j.psychsport.2012.10.002>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies*, 36(3), 329–340. <https://doi.org/10.1080/02614367.2015.1105859>
- Weatherwax, R. M., Byrd, B. R., Van De Velde, S., & Dalleck, L. C. (2015). the Cardiovascular and Metabolic Responses To Ultimate Frisbee in Healthy Adults. *Journal of Fitness Research*, 4(3), 36–44. <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=112229798&lang=pt-br&site=ehost-live>
- WFDF. (2019). *World Flying Disc Federation Strategic Plan 2015-2018*. http://www.wfdf.org/files/WFDF_Strategic_Plan_2015-2018.pdf

INTRODUÇÃO GERAL

A primeira parte da tese, fornece uma breve introdução ao Ultimate Frisbee (UF). Posteriormente são apresentadas informações relacionadas com o perfil dos jogadores de UF, bem como a apresentação de uma visão geral, da pesquisa dedicada ao UF. A segunda secção inclui duas Revisões Sistemáticas (RS) e dois estudos transversais que visam: (i) Teamwork: A Systematic Review of Implications From Psychosocial Constructs for Research and Practice in the Performance of Ultimate Frisbee Games; (ii) Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games; (iii) Dispositional orientations in Competitive Ultimate Frisbee athletes; and, (iv) Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game.

1.1. Ultimate Frisbee

A *World Flying Disc Federation* (WFDF) pretende, até 2024, promover as seguintes estratégias-chave: Estratégia 1: Promoção do “frisbee lifestyle”; Estratégia 2: Inclusão no Programa Olímpico e outros Jogos Multidesportivos; Estratégia 3: Apoiar as associações na promoção do desenvolvimento nas camadas jovens com o intuito de obter um crescimento sustentado; Estratégia 4: Aumentar o apoio do público, melhorando o entretenimento nas competições desportivas com o uso de discos; Estratégia 5: Apresentar o Espírito do Jogo como um elemento essencial dos desportos de disco; Estratégia 6 : Assegurar o bem-estar dos atletas e do desporto, incentivando a igualdade entre homens e mulheres e a diversidade de forma transversal; Estratégia 7: Otimizar a eficácia organizacional e a eficiência e estratégias a alcançar, com o objetivo de aproveitar os progressos obtidos desde 2011.

O objetivo de inclusão no Programa Olímpico, em Los Angeles 2028, não é um objetivo em si mesmo, mas uma parte importante da abordagem holística escolhida para divulgar os desportos de disco. A participação nos Jogos Olímpicos proporcionará visibilidade e credibilidade para apoiar os objetivos da WFDF (WFDF, 2019); por exemplo, incentivar a participação e a visualização de desportos de disco a todos os níveis, desde a participação como uma atividade de lazer, até aos mais altos níveis de competição de elite, tanto para homens como para mulheres. Para isso, é dada agora atenção estrutural à investigação em torno do UF e às suas características com predominância para o SOTG.

O estudo de UF sobre o carácter competitivo foi realizado juntamente com o Centro de

Investigação em Qualidade de Vida (CIEQV) do Instituto Politécnico de Leiria e no Centro de Investigação em Desporto, Educação Física e Exercício e Saúde (CIDEFES) da Universidade Lusófona sendo um dos muitos projetos para cumprir os objetivos acima referidos.

O racional leva-nos a refletir sobre o UF e sobre o SOTG, conduz a importantes percepções e importantes contributos ao nível do conhecimento, direcionado para professores, treinadores sobre vários temas do mundo do desporto. Em alguns locais, poderá proporcionar oportunidades para o mundo académico, poderá levar investigadores a envolverem-se neste entendimento, criando mecanismos mais eficazes para divulgar pesquisas que possam facilitar a mudança social e o ativismo (Coakley, 2015).

Qualquer investigação em torno do mundo do UF requer um breve olhar para a história deste desporto. Após alguma controvérsia sobre as suas origens, acabou por ser aceite pela maioria das fontes como sendo originária de William Russell Frisbie de Bridgeport, Connecticut, EUA (Johnson, 1975; Malafronte, 1998; Iocovella, 2004; Leonardo and Zagoria, 2004).

O UF foi concebido em 1967 nos Estados Unidos da América (EUA), por Joel Silver, que apresentou a sua ideologia em torno do Ultimate Frisbee em 1968, ao conselho estudantil da Columbia High School (CHS) em Maplewood New Jersey, EUA (Seidler, 2005). Em 1969, o primeiro jogo foi disputado entre dois grupos de estudantes numa altura em que as gerações mais novas pretendiam criar estilos de vida alternativos, experiência comunitária, através de vestuário, drogas e música (Heale, 2001). As regras da primeira e segunda edição foram elaboradas pelo estudante do CHS Buzzy Hellring e foram posteriormente refinadas por Silver e John Hines. Ponderando os valores e comportamentos que vieram representar a contracultura, que estava no seu auge em 1967 durante o que foi chamado, o verão do Amor (Farrell, 1997), Silver e membros do jornal estudantil *The Columbian* e o conselho de estudantes começaram a jogar um jogo de futebol de frisbee modificado (Johnson, 1975; Malafronte, 1998).

A primeira caracterização completa do UF, incluindo regras gerais e específicas, equipamento, tempo, pontuação, variantes do jogo e outras características, foi descrita por Clark, Hamilton e Bowden (1981). Posteriormente, o UF foi destacado como uma alternativa aos desportos de equipa com utilização de bolas em educação física, sendo incluído numa sequência pedagógica (chamada Ultimate Curriculum) para a introdução deste desporto em escolas norte-americanas (Caporali, 1988). Como os jogos desportivos podem trazer benefícios para além da componente física, como a motivação, no entanto, o efeito não tenha sido medido. Os participantes eram bastante hábeis, podiam manter um elevado nível de atividade física, o que pode não ser verdade para pessoas com menor capacidade ou mais jovens (Hannon & Pellett, 1998). A tentativa de promover o desporto levou alguns especialistas a destacar as suas qualidades no que diz respeito ao desenvolvimento de competências cognitivas, psicomotoras e

afetivas a diferentes níveis, além da aptidão cardiovascular (Caporali, 1988; Clark et al., 1981).

Atualmente, UF é conhecido simplesmente como ‘Ultimate’ para os participantes, e referida como tal. É um desporto de equipa, misto, rápido e sem contacto, jogado com um disco ou frisbee (Griggs, 2011) e combina características semelhantes à maioria dos jogos de evasão, como o futebol americano e o netball, num simples jogo (Spencer-Cavaliere et al., 2017).

Em 2020, *frisbee* é mais do que o nome de um tipo de equipamento desportivo ou de um desporto popular. É um estilo de vida, como evidenciado pelo hashtag #frisbeelifestyle (WFDF, 2020). O UF é um dos desportos de disco que a WFDF promove em todo o mundo. A WFDF é a federação desportiva internacional responsável a nível mundial pelos desportos de disco (frisbee), incluindo Ultimate, Beach Ultimate, Disc Golf, Freestyle, Guts e Individual Events. A WFDF é uma federação com 103 membros que representam desportos de discos e os seus atletas em mais de 100 países. É uma Federação Internacional reconhecida pelo Comité Olímpico Internacional (COI), pelo Comité Paralímpico Internacional, pela Federação Internacional de Desportos Universitários, é membro da Associação Global de Federações Desportivas Internacionais, pela Associação Internacional das Federações Desportivas Internacionais reconhecida pelo COI, pela Associação Internacional dos Jogos Mundiais, pela Associação Internacional de Jogos Masters e pela Associação Internacional de Desportos para Todos, A WFDF é signatária do Código Mundial Antidopagem e é uma empresa sem fins lucrativos registada no estado do Colorado, EUA.

Em relação ao número de associados, o país com maior número de membros é os EUA, seguido do Canadá, Austrália, Alemanha, Grã-Bretanha e Japão. As mulheres representam 37,8% de todos os jogadores UF ao nível da competição (WFDF, 2020). A continuidade dos desportos disco, SOTG, a paixão, a comunidade e a inclusão, são valores obrigatórios e declarados pela WFDF (WFDF, 2020). De acordo com os últimos dados, Portugal tem cerca de 500 associados muito heterogéneos, que praticam UF, Disc golf, Freestyle e Double disc court de forma lúdica e competitiva, em contacto com a natureza, na praia, na relva, e sempre com fair play. (Amoroso & Varregoso, 2015).

1.2. Perfil dos melhores jogadores de UF

O perfil de personalidade dos jogadores de UF é semelhante ao perfil dos jogadores que praticam outros desportos coletivos, mas notamos que o perfil dos jogadores de UF difere na escala do neuroticismo, as mulheres apresentaram um nível de neuroticismo mais elevado do que os homens, e a interpretação dos resultados apresentam que, as pessoas que treinam UF, independentemente do sexo são caracterizadas por indicadores médios de personalidade (Piepiora et al., 2020). O UF apresenta movimentos básicos semelhantes a outros desportos

de equipa e perfil de atividade e carga cardiovascular durante um jogo competitivo da UF são caracterizados como uma atividade intermitente de alta intensidade com grandes quantidades de corrida e sprint de alta intensidade e elevada carga com frequência cardíaca (HR) superior a 90% do RH máximo para mais de metade do jogo (Krustrup & Mohr, 2015). Os maiores requisitos fisiológicos encontrados durante o jogo de equipas mistas podem ser atribuídos a diferenças cardiovasculares subjacentes mediadas por género. Estas descobertas também parecem apoiar a eficácia da UF como uma ferramenta de exercício prescrito para benefícios para a saúde (Scanlan et al., 2015).

1.3. Investigação no UF

Até este momento, os poucos artigos científicos sobre UF não se concentraram na performance e análise do Espírito do jogo SOTG.

Por isso, compreender como o desporto coletivo pode tornar-se mais coeso é um tema importante para investigadores e especialistas em psicologia desportiva (Smith et al., 2013). Os estudos na área da psicologia aplicada ao desporto, destacam-se, com os praticantes de UF a apresentarem um nível médio de personalidade (Piepiora et al., 2020).

Os jogadores de UF têm como tarefa, explicar aos novos jogadores exatamente o que é aceitável em campo e o que não é (Griggs, 2011). No entanto, Spencer-Cavaliere, Kingsley e Gotvals (2017b) argumentam que, apesar das pretensões do UF de ser um desporto alternativo, ainda era suscetível a uma série de críticas frequentemente associadas ao desporto juvenil tradicional a nível competitivo. Assim como outros desportos menos conhecidos têm sido negligenciados, um desses é UF (Lam et al., 2021).

Devido ao rápido crescimento do número de praticantes de UF registados nos últimos anos, é possível verificar na literatura científica um interesse crescente pelos investigadores na área das ciências do desporto (e outras áreas) na caracterização do UF considerando: (i) e requisitos metabólicos em adultos e atletas saudáveis (Krustrup & Mohr, 2015; Leicht et al., 2019; Weatherwax et al., 2015); (ii) diferenças de género entre os praticantes de UF na escola e a nível universitário (Neville, 2019; Piepiora et al., 2020); (iii) análise sociológica do FSC associada a regras, ética e competitividade em praticantes de UF (Crocket, 2015, 2016); Griggs, 2009); (iv) biomecânica, trajetória do disco e prevenção de lesões (Akinbola et al., 2015; Koeble & Seiberl, 2020).

O SOTG foi um tema central ao longo de *ULTIMATE – The First Four Decades*, de Pasquale Anthony Leonardo e Adam Zagoria, publicado por Joe Seidler em 2005, que catalogou a história do Ultimate. É de notar que, apesar do nível de preocupação com a pureza dos princípios originais do Ultimate, os fundadores do CHS esperavam que os árbitros fossem

usados se o Ultimate tivesse um enorme crescimento. Além disso, enquanto os observadores são agora usados nos mais altos níveis de competição na América do Norte, a maioria dos jogos ainda são jogados sem observadores. A maioria dos jogadores norte-americanos afirmam que o espírito do jogo ainda está bem vivo (Rauch, 2005). De acordo com esta orientação observada um pouco em todo o mundo, o UF é um desporto coletivo auto arbitrado, onde é fundamental que todos os jogadores sejam ensinados /saibam que o jogo deve ser jogado de acordo com as regras. Estar consciente da importância do SOTG, ajuda a compreender as regras e torna todos os jogadores mais conscientes do que o desporto envolve (Amoroso, 2020).

Méndez-Giménez et al., 2015) descobriu que a dimensão SOTG está associada a outros domínios psicológicos, tais como desportivismo, objetivos sociais e amizade. Um estudo realizado por Piepiora, Sadowska e Supinski (2020) mediu o Espírito do Jogo entre as pessoas que treinam, incluindo homens (n = 30) e mulheres (n = 30) praticantes. O estudo revelou que o perfil de personalidade dos jogadores de UF diferia na escala do neuroticismo. As mulheres apresentavam um nível de neuroticismo mais elevado do que os homens e a interpretação dos resultados expôs que as pessoas que treinam UF independentemente do género são caracterizadas por indicadores de personalidade medianos. Um estudo qualitativo de Robbins (2012) revelou que a cooperação no UF, é o resultado de se tratar de um desporto federado e a promoção da regulação informal das competições através de normas, reputação e autodisciplina é mais utilizada.

De acordo com os últimos estudos relacionados com o UF, percebemos que há uma procura de respostas relacionadas com o jogo. No entanto, com a revisão literária descobrimos importante componente que caracteriza a modalidade nomeadamente a auto arbitragem e o espírito de jogo, permanecem pouco estudados.

1.4. Objetivo e Organização da Tese

Desde o início, o nosso objetivo foi compreender e explorar os conceitos éticos e de fair-play dos praticantes de elite de (UF) e identificar a importância do Espírito do Jogo (SOTG) para os praticantes de elite de UF. Onde surgem as principais questões da investigação: Qual é a orientação para o objetivo dos praticantes de elite de UF? Os participantes no EBUC revelam um bom Espírito? Para responder a estas questões, diferentes estudos serão relatados nesta tese:

Capítulo 1: Trabalho de equipa: Uma revisão sistemática das implicações das construções psicossociais para a investigação e prática no desempenho dos jogos Ultimate Frisbee.

Capítulo 2: Trabalho de equipa, espírito de jogo e comunicação: uma revisão das implicações dos construtos sociológicos para a investigação e prática em jogos de Ultimate Frisbee.

Capítulo 3: Orientações para a disposição dos atletas de Ultimate Frisbee de Competição.

Capítulo 4: Jogadores de Ultimate Frisbee: Características de acordo com o seu nível competitivo e espírito de jogo.

O objetivo desta tese passa pela obtenção de uma visão mais profunda relativa aos jogadores de UF numa dimensão competitiva e uma melhor caracterização do seu espírito de jogo, como uma parte essencial nos desportos de disco. O capítulo 1 centra-se no desenvolvimento do bom espírito nos jogadores de UF. Investiga as possíveis diferenças entre dimensões psicológicas. Examina o conteúdo dos estudos quantitativos para determinar se e como as características únicas da UF podem estar relacionadas com quatro temas psicológicos, que podem ser identificados durante o jogo. O capítulo 2 tem o mesmo objetivo que o capítulo 1, mas centra-se nas dimensões sociológicas. No Capítulo 3, Orientações disposicionais em atletas de ultimate frisbee de competição; Seria interessante compreender estas diferenças isolando algumas destas variáveis (por exemplo, idade, sexo, experiência, volume de formação ou humor motivacional criado pelo treinador). Por último, a investigação futura poderá alargar o estudo atual examinando os efeitos da competição de equipas no SOTG e performance, dependendo da dimensão do grupo, com grupos iguais ou superiores aos aplicados aqui. Capítulo 4 Espírito do jogo, o jogador da UF apresenta-se de acordo com o seu nível competitivo e SOTG. Este estudo investiga se o SOTG pode ser combinado em fatores únicos e como os jogadores de UF de competição se desenvolvem nestes fatores. Será considerado o seu papel a nível competitivo, bem como as possíveis diferenças entre os sexos.

Na terceira parte desta tese, os resultados dos diferentes estudos são combinados numa discussão geral e são tiradas conclusões para a sua tradução prática para treinadores, jogadores, professores de educação física e pessoas ligadas ao mundo do desporto e das ciências sociais.

Referências

- Akinbola, M., Logerstedt, D., Hunter-Giordano, A., & Snyder-Mackler, L. (2015). Ultimate frisbee injuries in a collegiate setting. *International Journal of Sports Physical Therapy*, 10(1).
- Amoroso, J. (2020). *Ultimate at Schools Program Teachers File - for Physical Education Teachers (primary to secondary school)*. 1st edition, WFDF. World Flying Disc Federation. Colorado Springs, United States of America. ISBN 978-3-00-065900-3. 1 (6), 61-68.
- Amoroso, J., & Varregoso, I. (2015). Ultimate frisbee: Um desporto de futuro, em contacto com a natureza. *E-Balonmano.Com: Revista de Ciencias Del Deporte*, 11(3), 175–176.
- Caporali, J. M. (1988). The Ultimate Alternative. *Journal of Physical Education, Recreation & Dance*, 59(7), 98–103. <https://doi.org/10.1080/07303084.1988.10606264>
- Carpenter, E. J. (2010). *The tactical games model sport experience: An examination of student motivation and game performance during an ultimate frisbee unit*. 1–307. http://search.proquest.com/docview/911148911?accountid=9851%5Cnhttp://tf5lu9ym5n.search.serialssolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rfr_id=info:sid/Physical+Education+Index&rft_val_fmt=info:ofi/fmt:kev:mtx:book&rft.genre=book&rft
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, 52(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Coakley, J. (2015). Assessing the sociology of sport: On cultural sensibilities and the great sport myth. *International Review for the Sociology of Sport*, 50(4–5), 402–406. <https://doi.org/10.1177/1012690214538864>
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, 52(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal*, 32(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Crocket, H. (2016). An ethic of indulgence? Alcohol, Ultimate Frisbee and calculated hedonism. *International Review for the Sociology of Sport*, 51(5), 617–631. <https://doi.org/10.1177/1012690214543960>
- Griggs, G. (2009). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society*, 12(10), 1317–1326. <https://doi.org/10.1080/14747600903281111>

- org/10.1080/17430430903204827
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society*, 14(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Hannon, J. C., & Pellett, T. L. (1998). Between Sport Games and Traditional Cardiovascular Activities. *Prevention*, 1453–1454. <https://doi.org/10.2466/pms.1998.87.3f.1453>
- Heale, M. J. (2001). *The sixties in America: history, politics and protest*. Dearborn Trade Publishing.
- Johnson, S. E. (1975). *Frisbee: a practitioner’s manual and definitive treatise*. Workman Publishing Company.
- Koeble, C., & Seiberl, W. (2020). Functional Adaptations in Isokinetic Performance and Shoulder Mobility in Elite Ultimate Frisbee Players. *Sportverletzung · Sportschaden*. <https://doi.org/10.1055/a-1023-4983>
- Krustrup, P., & Mohr, M. (2015). Physical Demands in Competitive Ultimate Frisbee. *Journal of Strength and Conditioning Research*, 29(12), 3386–3391. <https://doi.org/10.1519/JSC.0000000000000989>
- Lam, H., Kolbinger, O., Lames, M., & Russomanno, T. G. (2021). State Transition Modeling in Ultimate Frisbee: Adaptation of a Promising Method for Performance Analysis in Invasion Sports. *Frontiers in Psychology*, 12(May), 1–12. <https://doi.org/10.3389/fpsyg.2021.664511>
- Leicht, A., Connor, J., Doma, K., & Sinclair, W. (2019). Cardio-respiratory demands of Ultimate Frisbee in elite male athletes during a national championship. *Journal of Science and Medicine in Sport*, 22(2019), S64. <https://doi.org/10.1016/j.jsams.2019.08.267>
- Leonardo, P. A., & Zagoria, A. (2005). *Ultimate: The first four decades*. Joe Seidler.
- Malafrente, V. A. (1998). *The complete book of Frisbee: The history of the sport & the first official price guide*. Amer Trends Publishing Company.
- Méndez-Giménez, A., Fernández-Río, J., & Méndez-Alonso, D. (2015). Original Sport Education Model Versus Traditional Model : Effects on Motivation and Sportsmanship Modelo De Educación Deportiva Versus Modelo Tradicional : Efectos En La. *Revista Internacional de Medicina y Ciencias de La Actividad Física y Del Deporte*, 59, 449–466. <https://doi.org/10.15366/rimcafd2015.59.004>
- Neville, J. (2019). Dressed to play: An analysis of gender relations in college women’s ultimate Frisbee. *International Review for the Sociology of Sport*, 54(1), 38–62. <https://doi.org/10.1177/1012690217712503>
- Piepiora, P., Sadowska, M., & Supiński, J. (2020). The personality profile of ultimate frisbee players based on gender. *Quality in Sport*, 5(4), 28. <https://doi.org/10.12775/qs.2019.022>
- Profile, S. E. E. (2020). *Ultimate at Schools Program Teachers File - for Physical Education Teachers* (primary to secondary school). July.
- Rauch, R. L. (2005). *A History of the Spirit of the Game and Observers in the Sport of Ultimate*. 1–8. <https://wfdf.sport/history/history-of-sotg/>
- Robbins, B. G. (2012). Playing with fire, competing with spirit: Cooperation in the sport of ultimate. *Sociological Spectrum*, 32(3), 270–290. <https://doi.org/10.1080/02732173.2012.663713>
- Scanlan, A. T., Kean, C. O., Humphries, B. J., & Dalbo, V. J. (2015). Physiological and fatigue responses associated with male and mixed-gender ultimate frisbee game play. *Journal of Strength and Conditioning Research*, 29(9), 2600–2607. <https://doi.org/10.1519/JSC.0000000000000900>
- Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise*, 14(2), 249–257. <https://doi.org/10.1016/j.psychsport.2012.10.002>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies*, 36(3), 329–340. <https://doi.org/10.1080/02614367.2015.1105859>
- Weatherwax, R. M., Byrd, B. R., Van De Velde, S., & Dalleck, L. C. (2015). the Cardiovascular and Metabolic Responses To Ultimate Frisbee in Healthy Adults. *Journal of Fitness Research*, 4(3), 36–44. <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=112229798&lang=pt-br&site=ehost-live>
- WFDF. (2019). *World Flying Disc Federation Strategic Plan 2015-2018*. http://www.wfdf.org/files/WFDF_Strategic_Plan_2015-2018.pdf

PART 2

Chapter 1

STUDY I

Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games

Frontiers in Psychology, 3556
<https://doi.org/10.3389/fpsyg.2021.712904>

Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games

José Pedro Amoroso^{1,2}, Ricardo Rebelo-Gonçalves^{1,2,4}, Raul Antunes^{1,2,3}, Jay Coakley¹⁰, Pedro Teques^{8,9}, João Valente-dos-Santos^{4,5}, Guilherme Furtado^{6,7}

¹Institute Polytechnic of Leiria: Leiria, PT, ²CIEQV- Life Quality Research Center: Rio Maior, Leiria, PT, ³Institute Polytechnic of Santarém School of Sports of Rio Maior: Rio Maior, Santarém, PT, ⁴CIDAF – The Research Unit for Sport and Physical Activity, Faculty of Sport Sciences and Physical Education, Coimbra, PT (uid/dtp/04213/2020), ⁵Universidade Lusófona, CIDEFES: Lisboa, PT, ⁶N2i - Institute Polytechnic of da Maia: Maia, PT, ⁷Health Sciences Research Unit: Nursing (UICISA: E) - Nursing School of Coimbra (ESENfC), Coimbra, PT, ⁸Polytechnic Institute of Maia, Maia, PT, ⁹CIPER, Interdisciplinary Center for the Study of Human Performance, Lisbon, Portugal, ¹⁰University of Colorado in Colorado Springs, USA

Abstract

Introduction: Ultimate Frisbee (UF) is a non-contact, challenging and self-promoted team sport. Some factors such as the game environment and rules seem to influence athletes' behaviour. Goals: Provide a robust systematic review (SR) of the psychological domains associated to UF.

Methods: A SR according to Cochrane guidelines was completed. A reproducible search strategy was conducted by two independent reviewers in thirteen online databases: the Cochrane Central Register of Controlled Trials, Web of Science, SCOPUS, B-On, SportDiscus, Scielo; APA PsycINFO, Psychology and Behavioral Sciences; Academic Search Complete; Medline [PubMed]; ERIC; Google Scholar (allintitle); Open Access Thesis and Dissertations. The search occurred from 1st to 30th June 2020, and there were no limitations regarding the year of publication. Original papers that contained relevant data regarding psychological domains in the context of UF in English, Portuguese and Spanish were selected. The combination of main terms “ultimate frisbee” AND “sport psychology” was used in all data bases. A total of 464 studies were identified and selected in the last phase of selection. After the Screening (n= 301) and Eli-

gibility (n = 71) phases, a total of 30 potential papers were selected and classified. Finally, only four papers were qualified to be included in the final version of SR.

Results: The psychological dimensions revealed in the present study were: leadership; basic psychological needs; behaviors; task cohesion and performance; intrateam communication; performance-avoidance goals; friendship goals; sportsmanship associated to goal-directed self-talk and self-regulated learning.

Discussion: To our knowledge, this is the first SR about Ultimate Frisbee. In reviewing all the findings in the studies, there is evidence that UF can promote teamwork, task cohesion, leadership and increase friendship-approach goals.

Conclusion: The results revealed that group goals and promoting teamwork significantly predicted social cohesion and that teamwork and task cohesion was mediated by communication. Ultimate Frisbee is characterized by communication between all players, whether they are from the same team or the opposing team. In summary, the current study revealed real-time information about the game and its rules. This is important because UF is one of the few team sports worldwide that is self-refereed by participants.

Systematic Review Registration: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=169294, identifier: CRD42020169294.

Keywords: *teamwork, communication, task cohesion, flying disc, sport psychology*

1. Introduction

The first complete description of Ultimate Frisbee (UF), including general and specific rules, equipment, time, scoring, game variations, and others characteristics was presented by Clark, Hamilton, and Bowden (1981). From then on, UF was highlighted as an attractive alternative to traditional team sports in physical education classes, and a pedagogical sequence (called Ultimate Curriculum) for introducing this sport modality in the context of United States of America schools (Caporali, 1988) was even suggested. Currently, UF is one of the fastest-growing team sports (Piepiora et al., 2020) and the attempt to promote this sport has led some experts to highlight its qualities related to the development of cognitive, psychomotor and affective skills at different levels, in addition to the cardiovascular fitness (Caporali, 1988;

Clark et al., 1981).

Traditionally known as “Ultimate” among participants, UF is a fast paced, non-contact, mixed team sport played with a flying disc or frisbee (Griggs, 2011), assembling features of a number of invasion games, such as American football and netball, into a simple and demanding game (Spencer-Cavaliere et al., 2017). According to the annual census completed in 2019 by the World Flying Disc Federation (WFDF), the largest national member federation is USA, followed by Canada, Australia, Germany, Great Britain, and Japan. There are 86 active member associations, and 176,134 active players, 38% of which are women (WFDF, 2019; Koeble & Seiberl, 2020).

The rapid growth of registered UF practitioners in recent years has attracted interest among researchers in the sport sciences and other disciplines. The published literature on UF has generally focused on: *i*) physical, cardiovascular and metabolic demands in healthy adults and athletes (Krustrup & Mohr, 2015; Leicht et al., 2019; Weatherwax et al., 2015) the majority of Americans are not engaging in enough activity to meet the minimum guidelines. Ultimate Frisbee may serve as an alternate to more traditional physical activity modalities. The purpose of this study was (a; *ii*) gender differences among school and university players (Neville, 2019; Piepiora et al., 2020); *iii*) sociological analysis associated to rules, ethics and competitiveness among the UF practitioners (Crocket, 2015, 2016; Griggs, 2009b); throwing biomechanics, disc trajectory and injury prevention (Akinbola et al., 2015; Koeble & Seiberl, 2020) particularly as a collegiate club sport. In 2011, over 947,000 people played Ultimate. Sex, age, skill level, and physical demands of the sport place each player at risk for injury, yet there is limited information on the number of injuries with regard to clinical research. The purpose of this study is to identify injury reporting trends in Ultimate Frisbee against other collegiate club sports and examine correlation with sex, body region, and medical recommendations and to discuss associated risk of injury. **METHODS:** Athletes who sustained an injury related to participation in their respective club sport attended a physical therapy sports clinic, underwent screening, and were provided direction for injury management. Data was collected on various elements of each case with descriptive statistical analysis performed to catalog injury characteristics. Chi-square analyses were performed to compare proportions between sports, sex, and body region. **RESULTS:** Ultimate accounted for 143 (31.0%).

UF has many distinguishing features when compared to other team sports. These include self-arbitration, auto-regulation, and independent communication. In fact, UF is self-refereed even at the world championship level, and players are expected to stand by a moral code of fair play, called *Spirit of the Game* - SOTG (Crocket, 2015). The SOTG reveals these characteristics, and to some extent, appears to modulate behaviors, actions and some psychological

aspects of the game (Spencer-Cavaliere et al., 2017). For example, it is reported that the SOTG promotes the following (Clark et al., 1981), such as: *i*) competitive play combined with mutual respect between all players; *ii*) play for pleasure and joy; *iii*) rejecting actions such as provoking opponents, intentional aggressions, and "win at all costs" behaviors – all of which comprise the psychological dimension of UF according to some researchers (Griggs, 2009b, 2011).

Research conducted by Méndez-Giménez, Fernández-Río, & Méndez-Alonso, (2015) found that the SOTG is also associated with other psychological domains, such as sportsmanship, social goals, and friendship goals. Another study involving 60 players (30 men and 30 women), reported that the personality traits of UF players differed in levels of neuroticism, and that women had a higher neuroticism than men (Piepiora et al., 2020). Using qualitative research methods, (Robbins, 2012) revealed that cooperation in UF is due to the sport being federally recognized, thus promoting the regulation of competitions through norms, reputations, and self-discipline.

Psychological factors and their influence in the environment of UF has led researchers and practitioners to observe and take note of the impact of the SOTG during competitive events (Robbins, 2012) and its impact on the psychological characteristics of athletes in this sport (Knutson & McAndrew, 2016). To our knowledge, there is little empirical evidence related to the psychological domains in Ultimate Frisbee. In this sense, the objective of this systematic review (SR) is to consider research trends on Ultimate Frisbee (UF) and related psychological domains, involving the game's characteristics, such as self-arbitration, SOTG and the game environment.

2. Methods

To guarantee consistency, accuracy and replicability in this systematic review (SR), the following steps were adopted: *i*) definition of systematic search terms through the description and operationalization of concepts; *ii*) a pilot study of the systematic search of articles in order to verify the search accuracy in each previously selected database; and *iii*) registration of the pre-determined SR protocol in the PROSPERO database, under the number CRD42020169294.

2.1. Description of main concepts

- a. Ultimate frisbee: Ultimate is a team sport where the contact between players is not allowed. It is played by two, seven-person teams, and it can be played with gender-mixed teams. The official field measures 64 meters by 37.57 meters, with

22.86 meters end zones. Each game is played for 48 minutes and is divided into two 24-minute halves (Caporali, 1988). Because the game is self-refereed, tolerance requires players to give up a possible dishonest benefit (Crocket, 2015).

- b. Sport and exercise psychology is the scientific study of people and their behaviors in sport and exercise contexts and the real application of that understanding (Gill & Williams, 2008). Researchers work to recognize how the psychological factors associated with practical behavior inspire physical performance, and how the influence of participation in these activities could affect well-being emotional development and health of a person in that ecosystem (Tanaka & Sekiya, 2010).
- c. Sport and exercise psychology dimensions: the field of exercise psychology has tended to grow from sport psychology and sport science to become an increasingly important topic in health research and is now associated with areas such health psychology (Biddle & Fuchs, 2009; Lindahl et al., 2015). Some of the most studied dimensions include self-perception and personality (i.e. self-confidence, personality traits, leadership behavior), cognition (i.e. team communication), mood states (i.e. stress, anxiety, motivation), leadership, communication and team cohesion (Weinberg & Gould, 2014).

2.2. Pilot search

This preliminary stage of the study was carried out to verify which preliminary results would be generated using the previously selected terms in a combined or isolated manner. Search strategy was based on the descriptor terms and keywords, “frisbee,” or “flying disc,” combined with terms “ultimate frisbee”, indexed to the medical subject headings (Huang et al., 2011). In the first search, we used only the term "frisbee" and we identified 11792 results. In the second search the combination “frisbee” OR “flying disc” was used, and 11627 results emerged. In the sixth search, we entered the term "ultimate frisbee" and 2512 papers were identified.

After this process, the research team decided that improving the accuracy of the search in the different databases required that the terms should be previously selected, since the tools to assist advanced meta-search change depending on each database. Finally, the keywords defined in concordance with all the authors were: “ultimate frisbee” AND “sports psychology”. During this phase, possible additional terms that could be accessed in search assistants were also checked; however, no additional terms in the literature on the topic improved the search profile. Table 01 shows the key terms used in the respective databases in this phase, taking into account the number of articles generated from the different entries with the isolated or combined terms.

Data bases	“frisbee”	“flying disc”	“frisbee” OR “flying disc”	“frisbee” OR “flying disc” OR “discovoador”	“frisbee” OR “flying disc” AND “sports”	“ultimate frisbee”	“ultimate frisbee” AND “psychology”	“ultimate frisbee” AND “sport psychology”
PUBMED (Medline)	260	6	262	1425	31	17	0	0
WEB OF SCIENCE	213	22	212	212	197	53	1	1
SCOPUS	220	25	238	238	70	53	4	4
APA PsycInfo	43	2	45	68	43	15	8	6
B-ON	9821	235	10005	10041	9821	1963	720	428
ERIC	30	0	30	31	30	10	2	2
SportDiscus	92	6	96	102	94	48	10	10
Psychology and Behavioral Sciences	11	2	11	13	11	2	2	2
Academic Search Complete	335	11	342	880	338	42	9	9
SCIELO	5	5	5	11	3	0	0	0
Cochrane Central	7	1	8	9	0	0	0	0
Google Scholar	678	284	291	1	1	277	0	0
Open Access Thesis and Dissertations	77	68	82	84	5	32	2	2
Total of records	11792	1318	11627	13115	10644	2512	745	464

Table 1 – Search terms used depending on the different databases and the number of articles generated in the pilot search.

2.3. Search strategy

After the identification of key-terms, an exhaustive and systematic search was performed. A comprehensive, reproducible search was conducted in English (published or in press) across thirteen online databases: *i*) the Cochrane Central Register of Controlled Trials, *ii*) Web of Science, *iii*) SCOPUS, *iv*) B-On, *v*) SportDiscus, *vi*) Scielo; *vii*) APA PsycINFO, *viii*) Psychology and Behavioral Sciences; *ix*) Academic Search Complete; *x*) Med line [PubMed]; *xi*) ERIC; *xii*) Google Scholar (allintitle); *xiii*) Open Access Thesis and Dissertations. Original articles (exploratory, cross-sectional); interventional (quasi-experimental and Interventions) published between 1960 and 2020 investigating the associations between UF and different psychological dimensions were selected. The research procedures were carried out between the 1st

to the 30th of June 2020 by the first author, guided by the last author, who coordinated the SR.

2.4. Selected manuscripts criteria

The initial search was conducted by two researchers who used a list of terms and keywords. The subsequent screening procedures were implemented to determine whether the articles from the initial search were significant for the study. The selected articles in the present QSR met the following selection criteria: *i*) original research published in peer-reviewed online international journals indexed in all databases previously identified (excluded were letters to the editor, abstracts in conference proceedings and systematic review articles of any kind); *ii*) the articles should contain one or more keywords in the title or abstract to proceed to the screening phase; *iii*) reading of the article in full-text and discussion with other experts on the topic. Articles classified as “distrustful”, but already in the eligibility phase; *iv*) were considered articles of open or closed access. In the case of closed access articles, direct contact was made with one of the authors to obtain the full version of the manuscript.

2.5. Data extraction

The Selected Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement for the organization of this study was respected (Liberati et al., 2009; Moher et al., 2015). The guidance of PRISMA describes four specific stages (identification, screening, eligibility, final selection) necessary to implement the search and selection of manuscripts under a SR and feature the flowchart which indicates the respective final selection phases of the studies (see figure 1). PRISMA guidelines presents the PICO acronym (population', 'intervention', 'comparison, comparison', 'outcomes'), which directs the improvement of the systematic search, operating the extraction. Table 2 identifies the characteristics of the present study, considering the adapted version of acronym PICO guidelines.

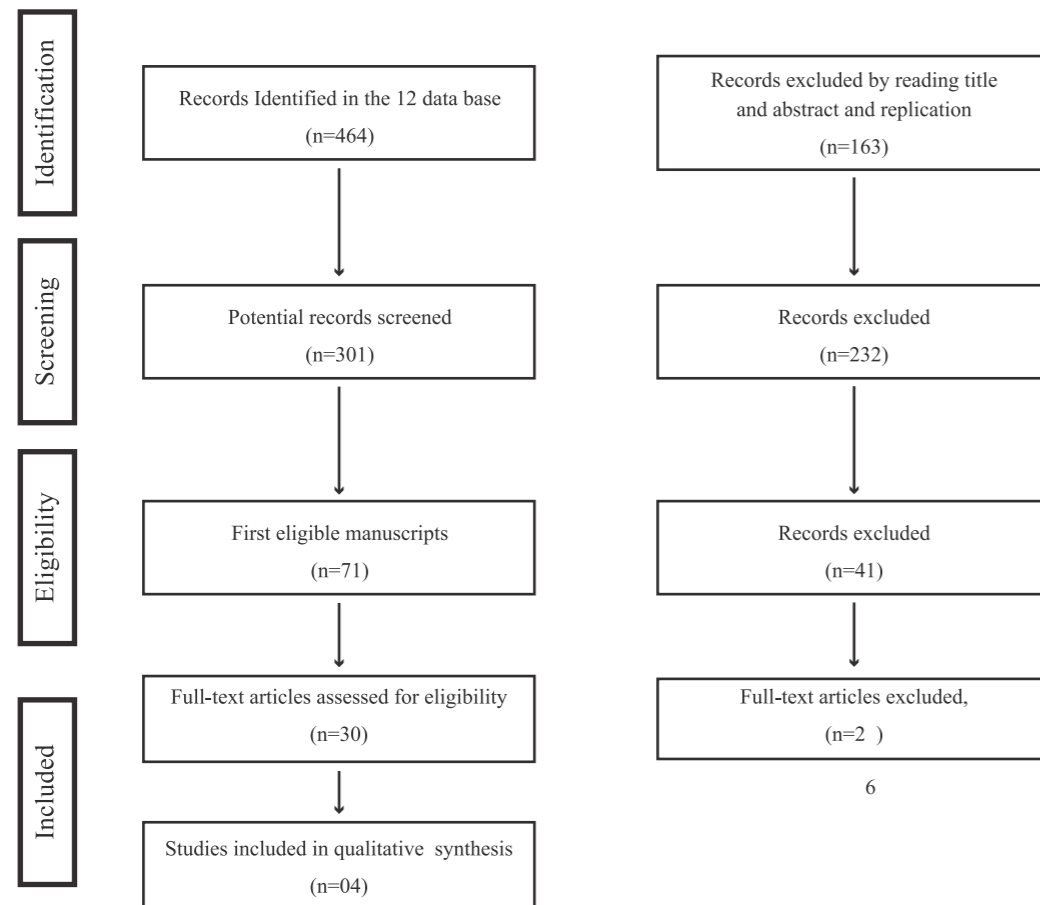


Figure 1 – Flowchart of studies included following PRISMA guidelines

Acronym	Information
P	Athletes (age, gender, categories, physical condition, school sport, university sport, sport club)
I	The game (or tournament/championships) of Ultimate Frisbee
C	The Ultimate Frisbee game and/or the subgroups of independent variables
O	Characterized psychological dimensions (i.e., leadership, behaviors, cohesion, performance, goal orientation, sportsmanship)

Table 2 – Presentation of the characteristics of the studies included in the review according to of adapted PICOS guidelines.

2.6. Quality of assessment

In addition, the Strengthening Reporting of Observational studies in Epidemiology (STROBE) Positioning Statement was used (Von Elm et al., 2009) which hampers the assessment of its strengths and weaknesses and of a study's generalisability. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE). This method consists of a

checklist containing 22 items (100%), which characterizes each study based on the quality assessment that it presents. In this SR, a mutual model of study designs, which is specifically assessed, epidemiological, observational, population-based, cross-sectional or cohort studies was used (Abeyseena, 2011). The purposefulness of this process was not to use a traditional cut-off points to be included, or not included some papers in the SR. In its place, the percentage value was used to identify studies in which little quality assessment could affect the quality of SR evidence. Table 3 shows the summary of evidence of all studies included in the SR.

ARTICLE	Items (paper session)	1. Nichola Callow et al. (2009)	2. Matthew J. Smith et al. (2013)	3. Méndez-Giménez, A. et al. (2015)	4. Latiniak et al. (2018)	Note: met the criteria yes = 1; no = 0
Title and Abstract	I	1	1	1	1	
Introduction Background/rationale	II	1	1	1	1	
Introduction - Objectives	III	1	1	1	0	
Methods: study design	IV	1	1	1	1	
Methods: Settings	V	1	1	1	0	
Methods: Participants	VI	1	1	1	0	
Methods: Variables	VII	0	1	0	0	
Methods: data sources/measurement	VIII	1	1	1	1	
Methods: Bias	IX	0	0	0	0	
Methods: Study size	X	1	1	1	1	
Methods: Quantitative variables	XI	1	1	1	0	
Methods: Statistical methods	XII	1	1	1	1	
Results participants	XIII	1	1	1	1	
Results: Descriptive data	XIV	1	1	1	1	
Results: Outcome data	XV	1	1	0	1	
Results: Main results	XVI	1	1	1	1	
Results: Other analyses	XVII	1	1	1	0	
Discussion: Key results	XVIII	1	1	1	0	
Discussion: Limitations	XIX	1	1	1	1	
Discussion: Interpretation	XX	1	1	1	1	
Discussion: Generalisability	XXI	1	1	1	0	
Funding	XXII	0	0	0	0	
Sum items	22	19	20	18	11	
Total Percentage of items	100%	86%	91%	82%	50%	

Table 3 – Quality assessment of selected papers using STROBE - combined check-list.

2.7. Data analysis and risk of bias

A SR search method was performed to identify all possible data for this review following Cochrane guidelines, considering all the previous criteria. A single reviewer (first author) checked the list of articles and discarded irrelevant hits based on title and abstracts. Then, two reviewers (penultimate and last authors) selected, independently, those papers that fulfilled inclusion criteria. Subsequently, risk of bias was assessed for each study using Cochrane criteria. Any disagreement was resolved by discussion with all authors. During the process of constructing the SR (mainly considered the pilot search phase), it was found that the evidence gathered did not allow us to select a central outcome to proceed to a SR with meta-analysis. At the end of the search, the small number of selected articles corroborated this point.

3. Results

3.1. Results of meta-search

A total of 464 references were identified through the database in the first phase. Out of these, 163 references were excluded after reading title and abstract and replication. After applying these initial criteria, a total of 301 articles entered phase 2 of eligibility. Of these, 232 papers were later excluded for reasons such as “*dealt with other similar modalities*”, or “*approached study dimensions of different nature*”, among others. After the full text of articles was assessed, a total of 71 articles remained eligible, 41 of which were excluded, mainly because they used qualitative research methods. In the last phase of Inclusion, all authors decided that only articles that have psychological dimensions would be included in the final SR, considering the previously presented concepts. As a result, 25 studies were excluded at this stage because they presented social or psychosocial approaches that could cause bias in the presentation of results. In total, four studies were included in the final version of SR.

3.2. General characteristics of selected studies

Table 04 shows the general characteristics of all studies included in this SR. Of the five selected studies, 2 were characterized as intervention studies (Latinjak et al., 2018; Méndez-Giménez et al., 2015), and 2 used a cross-sectional design (Callow et al., 2009a; Smith et al., 2013). A total of 895 UF players of both genders (n = 367 female; n = 528), from 4 different countries (Britain, UK, Spain, and Poland) participated in these 4 different studies. Different levels of UF players can be observed across the selected studies (novice players, student play-

ers, university players and team players). We also observed that the participants’ age generally varies between 20.77(±2.03) and 24.30(±3.90) years. The experience of regular and deliberate practice of UF with the same captain varies between 1.25 (±1.30) years in the different selected studies. Lastly, we noted that leadership behaviors (Callow et al., 2009b), leadership and task cohesion (Smith et al., 2013), motivation and sportsmanship (Méndez-Giménez et al., 2015), goal-directed self-talk and performance (Latinjak et al., 2018), and personality profile (Piepiora et al., 2020) were the sport psychological dimensions investigated in the four selected studies.

Author	Sample	Age (M±SD)	Type of study	Measures	Main Findings
1. Nichola Callow et al. (2009)	309 club standard ultimate Frisbee players in the United Kingdom	24.30±3.90	Cross-sectional study	Transformational leadership, cohesion and performance levels of study participants	High evidence for the validity of the Differentiated Transformational Leadership Inventory (DTLI) and high relationship between specific transformational leadership behaviour’s and both cohesion and level of performance.
2. Matthew J. Smith et al. (2013)	199 university level ultimate frisbee players (199 participants (male 110, female 89))	20.77±2.03	Cross-sectional study	Transformational leadership, intrateam communication and Team cohesion	The differentiated model of transformational leadership allowed identification of specific leadership behaviours that predict both intrateam communication and task cohesion; Training to develop specific leadership behaviour’s; leader training to improve intrateam communication, might be an intervention to increase the task cohesion of sports teams.
3. Méndez-Giménez, A. et al. (2015)	295 secondary school students	14.2±1.68	Interventional study (A quasi-experimental design)	Mastery, performance, friendship, autonomy, competence, relatedness, Social conventions, rules and officials and opponent.	The Sport Education (SE) model has been proven more efficient than a Traditional teaching approach to develop the best valanced achievement goals and social goals, to fulfil students’ basic psychological needs and to promote fair play;
4. Alexander T. Latinjak et al. (2018)	32 novice Ultimate Frisbee players	22.88±9.71	Interventional study	Instructional self-talk	interactions between instructional self-talk content and performance outcomes; Athletes in self-talk intervention should not only create and use self-talk plans, but also learn to adapt their cue words to forthcoming actions as well as past, successful and unsuccessful, attempts. The results of this study suggested that several relevant psychological constructs can be expressed by athletes via self-talk; Coaches who learn to listen carefully to their athletes’ goal-directed self-talk might gain additional insight regarding their personality;

Table 4 – Summary of reviewed studies.

3.3. Specific characteristics of selected studies

In the first cross-sectional exploratory study, involving a sample of 309 (24.3±3.9 years old) UF players (female: n = 105; male: n = 204), the results indicated that the leadership behaviors of fostering acceptance of group goals and promoting teamwork, high performance expectations, and individual consideration significantly predicted task cohesion (Callow et al., 2009b). In this study, the authors verified that the results offered support for the factorial and discriminant validity of the Differentiated Transformational Leadership Inventory (DTLI) questionnaire. Later, the DTLI questionnaire had its final validation processes completed (Smith et al., 2013).

The second cross-sectional study, including 199 UF university players aimed to analyze the instruments that may mediate the connection between transformational leadership behaviors and follower outcomes in the sporting domain (Smith et al., 2013). The results showed that the relationship between individual consideration and task cohesion was intermediated by communication. In addition, the relationship between fostering acceptance of group goals, teamwork and task cohesion was mediated by communication. Elevated performance expectations were found to be strongly related to task cohesion and it was not correlated to any of the sub-dimensions of communication. Essentially, the authors concluded that transformational leader behaviors straight are directly related to group outcomes such as cohesion (Smith et al., 2013). In this analysis, two questionnaires were used: the Scale for Effective Communication in Team Sports-British (SECTS-B; Sullivan & Callow, 2005), to assess ‘intra-team communication’; and the Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985) to examine ‘team Cohesion’.

In the third interventional study, involving a total of 295 secondary school students, aged 12–17 years old, the analysis indicated that a mastery-approach and friendship-avoidance goals constituted the main score, while both performance goals achieved the lowest scores in this specific group of students (Méndez-Giménez et al., 2015). The results also indicated that all interventions increased friendship-approach goals. In conclusion, the sport education model was proven to be more proficient than a traditional teaching approach to improve the most balanced achievement goals and social goals, to fulfil students’ basic psychological needs and to promote fair play. According to this study, authors applied questionnaires in two sessions with thirty minutes prior to and after the completion of a twelve-week intervention program. The following questionnaires were applied: *i*) the Achievement goals Framework (Elliot & McGregor, 2001) mastery-avoidance, performance approach, and performance-avoidance goals was proposed and tested in 3 studies. Factor analytic results supported the independence of the 4

achievement goal constructs. The goals were examined with respect to several important antecedents (e.g., motive dispositions, implicit theories, socialization histories; *ii*) Friendship goals Questionnaire – Physical Education (Garn & Sun, 2009); *iii*) Basic Psychological Needs in Exercise Scale (Méndez-Giménez et al., 2014); *v*) Multidimensional Sportspersonship Orientations Scale (Vallerand et al., 1997) social conventions and the opponent, as well as full commitment to the sport and the relative absence of a negative approach toward sport participation. The psychometric properties of the MSOS are ascertained in two studies. The first study developed the MSOS which was then tested on 362 amateur athletes (211 boys and 151 girls with a mean age of 14.4 years from six sports: badminton, basketball, hockey, swimming, track and field and volleyball).

In the fourth interventional study developed by (Latinjak et al., 2018) a total of 32 novice Ultimate Frisbee players were participants. To verify the results of the intervention, the authors examined goal-directed self-talk in a total of three situations: before a throw, after a successful or unsuccessful throw. During this part of the research, the participants were asked to write as many self-instructions as they considered giving themselves to increase their performance or make progress on the task; (a) before a throw, (b) after unsuccessful throws, and (c) after successful throws. Success and failure were, mostly, determined by the players subjective performance evaluations, and secondarily, by the effective reception of the frisbee by a team player. According to the same authors, the innovative contribution of this study was the description of differences in the content of instructional self-talk depending on the situation. The results highlight that there is no reason to believe that only UF players use goal-directed self-talk or that no one else uses the categories of self-talk they have used. In addition, they suggested that several relevant psychological constructs can be expressed by athletes via self-talk (Theodorakis et al., 2000), motivational self-talk, and instructional produced considerably better performance than a control condition for a strength task. Furthermore, samples of goal-directed self-talk could yield complementary insight to information achieved through the administration of psychometrics questionnaires.

3.4. Description of excluded studies

The study developed by Piepiora et al. (2020), aimed to determine the personality of the ultimate frisbee players and was the only study excluded in the ‘included phase’. Despite fulfilling the stipulated classification criteria, this study did not become eligible for inclusion because important elements that helped understanding the main aspects of psychological domains related to UF were omitted according combined check-list STROBE statement (Von Elm et al., 2009) which hampers the assessment of its strengths and weaknesses and of a study's

generalisability. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE). No additional information from this study could be obtained, making it difficult to characterize the study (see Table 03). Regarding other studies excluded during the eligibility phase, we identified that they had a scope related to the field of the psychosociological or sociological of sport (Crocket, 2016; Griggs, 2009a; Neville, 2019). Despite having similarities to those defined for inclusion, these excluded studies presented specific characteristics, such as the use of qualitative design as a method of data collection.

4. Discussion

The aim of this SR was to identify the psychological dimensions associated with UF involving a detailed and comprehensive plan and search strategy, intending to identify, assess and synthesize all relevant studies on this specific team sport. To the authors knowledge, this is the first systematic review on this topic. The results revealed a direction for the improvement in the dimensions of leadership, behaviors, task cohesion, group goals, teamwork, social goals and performance among those who practice UF. This strongly suggest that there are lines of research that seek to highlight UF as a sport with potential in different areas. However, UF is a self-refereed sport, and this variable was not included in any of the studies.

Ultimate Frisbee is a competitive, non-contact, invasion-style team sport played with a flying disc (Crocket, 2013; Griggs, 2011; Thornton, 2004). Cooperation between teammates is a dependent factor for success, which characterizes the internal logic and Players's tactical behavior and teamwork. With UF we can apply teaching directed to young people so that in a formal or non-formal way they can learn to self-regulate. The implementation of activities intended to improve the level of respect in schools will be valuable in educating sportsmanship behaviors (Koç & Yeniçeri, 2017). This way practitioners have an opportunity to reveal on areas of their practice which may be developed, and researchers have new opportunities to consider how they can continue to advance the body of writing.

In reviewing all the findings in the studies, there is evidence that UF can promote teamwork, task cohesion, leadership and increase friendship-approach goals. As goals affect performance by focusing attention to the task, encouraging persistence, and increasing effort, intensity and new performance strategies (Vallerand, 2012) UF athletes know that goal is important but not the most important (Carpenter, 2010).

Future expectations about the SOTG were not mentioned in any of the four selected studies. When Griggs (2011) reviewed how the constitutive rules of UF operated in practice

within the ethos of Spirit of the Game, he noted that the high degree of social control within UF was related to self-refereeing and an implied agreement among players to uphold the rules of the sport. Similarly, Thornton (2004) portrayed SOTG as a code of conduct that supported and reinforced self-officiating. As evident in this article, UF and SOTG promote goal setting those structures and organizes an approach to participation that enables youngsters in daily training to define sport competitions with focus and good direction.

Some of them with a qualitative nature that sought to study psychosocial aspects of UF. We are not aware of any other studies, have looked for other dimensions as team leadership would demand that the opposing team leadership rectify the situation either by controlling their teammate or by removing their teammate from play (Robbins, 2012). This is possible because UF is a self-regulated team sport even at the level of International and World Games (Griggs, 2011). This led us to think that psychosocial research may make sense in a sport that contains normative foundations unlike those in most team sports. For example, it is a spirit of self-control that enables UF players to develop ethical perspectives related to self and others on the field of play (Crocket, 2015).

In terms of practical applications, as outlined at the start of this discussion, we have identified important UF characteristics that should be highlighted. First, there may be value in checking certain psychological characteristics among UF players such as friendship (Méndez-Giménez et al., 2012). Second, interventions for increasing the sport education achievement goals and social goals to fulfil students' basic psychological needs and to promote fair play can take many forms and can be undertaken in various settings. This is helpful when interventions target individuals, small groups, and teams as we found that communication is a mediator in teamwork (Bosselut et al., 2018; Smith et al., 2013).

Theoretical frameworks tend to be biased because they focus on understanding cognitions when other psychological constructs may also be important in team sports. Self-refereeing creates the responsibility to play sport by the rules for sporting truth, the pleasure of play. Although, more research is needed to understand its implications, we believe that insights related to self-refereeing should be applied in different contexts. Goal orientations or motivation and achievement orientations are identified in most of the articles (Duda & Nicholls, 1992) yet there is little comparative evidence on the nature or generality of achievement motivation across these domains. In this study, beliefs about the causes of success in school and sport of 207 high school students were found to be related in a logical fashion to their personal goals. The ego-involved goal of superiority was associated with the belief that success requires high ability, whereas task orientation (the goal of gaining knowledge. One strategy that can help teachers, students, coaches, and sports lovers make successful behavior change is to apply this

sports characteristic).

Regarding clarity of definitions, there is a lack of precision over some operational terms and classification of playing levels between studies. For example, the classification of ‘novice’ players ranged from novice UF players (Latinjak et al., 2018) to university UF players (Smith et al., 2013). In this sense, more clarity is necessary in defining player levels in the literature (Swann et al., 2015). It is also important for coaches to know about, understand, and enhance the characteristics of UF (self-regulation, self-refereeing, autonomy) as a key factor that make it possible to interpret collective games in ways that enhance self-regulation, self-refereeing, and autonomy so that participation leads to more “self-determined” behaviors. Therefore, it is essential to know the motivational determinants for the practice of Ultimate Frisbee. Finally, the use of cross-sectional research designs typically generates biased estimations of longitudinal mediation parameters even when samples are large. Additionally, cross-sectional designs in quantitative literature limits our ability to establish causal relationships between psychosocial factors and performance (Maxwell et al., 2011).

The present study has added original information to the current body of literature by highlighting trends in the field of sport psychology applied to UF, and by providing an exhaustive methodological appraisal of the included studies. This can assist researchers doing future studies on these dimensions or others psychological correlates.

Due to the limited number of articles related with UF, there are opportunities to gain additional understanding of the related psychological aspects. Therefore, it is important to establish a global view around this specific area of study related with a self-refereed sport. Despite some limitations, this SR study helps to understand the lines of investigation that have been used to study UF and how to improve understanding of the game and its inherent psychological behaviors. Due to the characteristic of the modality and the studies carried out so far, these dimensions seem to be attractive and should be explored in future studies, considering the introduction of other psychological related dimensions (i.e., task cohesion, group cohesion, leadership, teamwork, sportsmanship, goal orientation) as they are related to gender identities, player interaction, sports landscape, and peace culture.

5. Conclusion

The current study provided a systematic review of the psychological domains associated to UF. We identified lines of investigation, but none takes a specific approach to self-refereeing and the use of the SOTG game sheet. Finally, we found that group goals and promoting

teamwork significantly predicted social cohesion and that teamwork and task cohesion was mediated by communication. Ultimate Frisbee is characterized by communication between all players, whether they are from the same or opposing team. In summary, the current study provides in real-time knowledge about the game and its rules as they exist in one of the few team sports that is self-refereed. There seems to be a differentiation in the players' awareness of the game using the *Spirit of the game* sheet as the main differentiating factor. Their understanding may be crucial to develop new leadership behaviors of acceptance of group goals and teamwork promotion with high performance expectations and predicted task cohesion. Regarding the relationship between acceptance of group goals, teamwork and task cohesion can be mediated by communication, aiming for the improvement of performance expectations and related to task cohesion. Regarding the sport education model can considerably increase a balanced achievement goals and social goals in students and to promote fair play. Therefore, there is a need to clarify the motivational self-talk and instructional produced better performance than a control condition for a strength task. An exciting avenue for future research would be important to examine and compare the *Spirit of the Game* with psychological correlates. This review suggests a some of different practical implications directions for future studies to improve our understanding of the relationship between psychological behavior and UF practitioners' athletes.

Disclosure statement

No potential conflict of interest was reported by all authors.

Acknowledgements

We would like to thank the to the WFDF - World flying disc federation for all the support, and to the Erasmus + Village on move project team. Many thanks to our research team for all effort and contributions.

Funding

This work was partially supported by Erasmus + Project Villages on Move Network (VOMNET) with number 603120-EPP-1-2018-1-FI-SPO-SSCP, and by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Contributors

Conceptualization: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, Pedro Teques, João Valente-dos-Santos· Guilherme Furtado; Data curation: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, João Valente-dos-Santos, Guilherme Furtado;

Formal analysis: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, João Valente-dos-Santos, Guilherme Furtado; Funding acquisition: José Pedro Amoroso, João Valente-dos-Santos; Investigation: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, Pedro Teques, João Valente-dos-Santos; Guilherme Furtado; Methodology: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, Pedro Teques, João Valente-dos-Santos; Guilherme Furtado; Project administration: José Pedro Amoroso, João Valente-dos-Santos; Guilherme Furtado; Resources: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, Pedro Teques, João Valente-dos-Santos; Guilherme Furtado

6. References

- Abeyseena, C. (2011). Strengthening the reporting of observational studies in epidemiology (STROBE) statement: New guidelines for reporting observational studies. *Journal of the College of Community Physicians of Sri Lanka, 13*(2), 20–22. <https://doi.org/10.4038/jccpsl.v13i2.2965>
- Akinbola, M., Logerstedt, D., Hunter-Giordano, A., & Snyder-Mackler, L. (2015). Ultimate frisbee injuries in a collegiate setting. *International Journal of Sports Physical Therapy, 10*(1).
- Biddle, S. J. H., & Fuchs, R. (2009). Exercise psychology : A view from Europe. *Psychology of Sport & Exercise, 10*(4), 410–419. <https://doi.org/10.1016/j.psychsport.2009.02.011>
- Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009a). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology. https://doi.org/10.1080/10413200903204754*
- Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009b). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology, 21*(4), 395–412. <https://doi.org/10.1080/10413200903204754>
- Caporali, J. M. (1988). The Ultimate Alternative. *Journal of Physical Education, Recreation & Dance, 59*(7), 98–103. <https://doi.org/10.1080/07303084.1988.10606264>
- Carpenter, E. J. (2010). *The Tactical Games Model Sport Experience: An Examination of Student Motivation and Game Performance During an Ultimate Frisbee Unit Submitted to the Dissertation Committee TESI Program at the University of Massachusetts at Amherst in partial fulfillment. May.*
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation, 52*(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal, 32*(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Crocket, H. (2016). An ethic of indulgence? Alcohol, Ultimate Frisbee and calculated hedonism. *International Review for the Sociology of Sport, 51*(5), 617–631. <https://doi.org/10.1177/1012690214543960>
- Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84*(3), 290–299. <https://doi.org/10.1037//0022-0663.84.3.290>
- Elliot, A. J., & McGregor, H. A. (2001). A 2 x 2 goal achievement framework. In *Journal of Personality and Social Psychology* (Vol. 80, Issue 3, pp. 501–519).
- Enggasse, A. O., & Germany, D. H. (2019). *WFDF Congress. 49*(0).
- Garn, A., & Sun, H. (2009). Approach-avoidance motivational profiles in early adolescents to the PACER fitness test. *Journal of Teaching in Physical Education, 28*(4), 400–421. <https://doi.org/10.1123/jtpe.28.4.400>
- Griggs, G. (2009a). “Just a sport made up in a car park?”: The “soft” landscape of Ultimate Frisbee. *Social and Cultural Geography, 10*(7), 757–770. <https://doi.org/10.1080/14649360903205124>
- Griggs, G. (2009b). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society, 12*(10), 1317–1326. <https://doi.org/10.1080/17430430903204827>
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society, 14*(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Huang, M., Névéol, A., & Lu, Z. (2011). Recommending MeSH terms for annotating biomedical articles. *Journal of the American Medical Informatics Association, 18*(5), 660–667. <https://doi.org/10.1136/amiajnl-2010-000055>
- Knutson, J. A., & McAndrew, F. T. (2016). The Experience of Competition in Same- Versus Mixed-Sex Team Sports. *Women in Sport and Physical Activity Journal, 24*(1), 7–13. <https://doi.org/10.1123/wspaj.2015-0004>
- Koç, Y., & Yeniçeri, S. (2017). An Investigation of the Relationship between Sportsmanship Behavior of Students in Physical Education Course and Their Respect Level. *Journal*

- of *Education and Training Studies*, 5(8), 114. <https://doi.org/10.11114/jets.v5i8.2477>
- Koeble, C., & Seiberl, W. (2020). Functional Adaptations in Isokinetic Performance and Shoulder Mobility in Elite Ultimate Frisbee Players. *Sportverletzung · Sportschaden*. <https://doi.org/10.1055/a-1023-4983>
- Krustrup, P., & Mohr, M. (2015). Physical Demands in Competitive Ultimate Frisbee. *Journal of Strength and Conditioning Research*, 29(12), 3386–3391. <https://doi.org/10.1519/JSC.0000000000000989>
- Latinjak, A. T., Masó, M., & Comoutos, N. (2018). Goal-directed self-talk used during technical skill acquisition: The case of novice ultimate frisbee players. *Sport Psychologist*, 32(1), 60–65. <https://doi.org/10.1123/tsp.2017-0047>
- Leicht, A., Connor, J., Doma, K., & Sinclair, W. (2019). Cardio-respiratory demands of Ultimate Frisbee in elite male athletes during a national championship. *Journal of Science and Medicine in Sport*, 22(2019), S64. <https://doi.org/10.1016/j.jsams.2019.08.267>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of Clinical Epidemiology*, 62(10), e1–e34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>
- Lindahl, J., Stenling, A., Lindwall, M., & Colliander, C. (2015). *Trends and Knowledge Base in Sport and Exercise Psychology Research : A Bibliometric Review Study. December 2014*. <https://doi.org/10.1080/1750984X.2015.1019540>
- Maxwell, S. E., Cole, D. A., & Mitchell, M. A. (2011). Bias in cross-sectional analyses of longitudinal mediation: Partial and complete mediation under an autoregressive model. *Multivariate Behavioral Research*, 46(5), 816–841. <https://doi.org/10.1080/00273171.2011.606716>
- Mé'ndez-Gime'nez, A., Ferná'ndez-Ri'ó, J., & Cecchini-Estrada, J. A. (2014). Validació'n de la versio'n en espan&tild;ol del cuestionario de metas de amistad en educacio'n fi'sica. *Universitas Psychologica*, 13(1), 227–237. <https://doi.org/10.11144/Javeriana.UPSY13-1.vvec>
- Mé'ndez-Gimé'nez, A., Ferná'ndez-Ri'ó, J., & Mé'ndez-Alonso, D. (2012). Valoració'n de los adolescentes del uso de materiales autoconstruidos en educació'n física. / Assessment of adolescent self-constructed material use in physical education. *Retos: Nuevas Perspectivas de Educació'n Física, Deporte y Recreación*, 2041(22), 24–28. <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=85719097&lang=pt=-br&site=ehost-live>
- Mé'ndez-Gimé'nez, A., Ferná'ndez-Ri'ó, J., & Mé'ndez-Alonso, D. (2015). Original Sport Education Model Versus Traditional Model : Effects on Motivation and Sportsmanship Modelo De Educació'n Deportiva Versus Modelo Tradicional : Efectos En La. *Revista Internacional de Medicina y Ciencias de La Actividad Fisica y Del Deporte*, 59, 449–466.
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., Stewart, L., & PRISMA-P. (2015). Evaluation of ASTM Standard Test Method E 2177, 6 Retroreflectivity of Pavement Markings in a Condition of 7 Wetness. *Systematic Reviews, January*, 1–9. <https://doi.org/10.1186/2046-4053-4-1>
- Neville, J. (2019). Dressed to play: An analysis of gender relations in college women's ultimate Frisbee. *International Review for the Sociology of Sport*, 54(1), 38–62. <https://doi.org/10.1177/1012690217712503>
- Piepiora, P., Sadowska, M., & Supiński, J. (2020). The personality profile of ultimate frisbee players based on gender. *Quality in Sport*, 5(4), 28. <https://doi.org/10.12775/qs.2019.022>
- Robbins, B. G. (2012). Playing with fire, competing with spirit: Cooperation in the sport of ultimate. *Sociological Spectrum*, 32(3), 270–290. <https://doi.org/10.1080/02732173.2012.663713>
- Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise*, 14(2), 249–257. <https://doi.org/10.1016/j.psychsport.2012.10.002>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies*. <https://doi.org/10.1080/02614367.2015.1105859>
- Swann, C., Moran, A., & Piggott, D. (2015). Defining elite athletes: Issues in the study of expert performance in sport psychology. *Psychology of Sport and Exercise*, 16(P1), 3–14. <https://doi.org/10.1016/j.psychsport.2014.07.004>
- Tanaka, Y., & Sekiya, H. (2010). The Relationships between Psychological/Physiological Changes and Behavioral/Performance Changes of a Golf Putting Task under Pressure. *International Journal of Sport and Health Science*, 8(January 2010), 83–94. <https://doi.org/10.5432/ijshs.20100006>
- Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *Sport Psychologist*, 14(3), 253–271. <https://doi.org/10.1123/tsp.14.3.253>

- Vallerand, R. J., Brière, N. M., Blanchard, C., & Provencher, P. (2016). Development and Validation of the Multidimensional Sportspersonship Orientations Scale. *Journal of Sport and Exercise Psychology, 19*(2), 197–206. <https://doi.org/10.1123/jsep.19.2.197>
- Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2009). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for reporting observational studies. *UroToday International Journal, 2*(2), 20–22. <https://doi.org/10.1136/bmj.39335.541782.ad>
- Weatherwax, R. M., Byrd, B. R., Van De Velde, S., & Dalleck, L. C. (2015). the Cardiovascular and Metabolic Responses To Ultimate Frisbee in Healthy Adults. *Journal of Fitness Research, 4*(3), 36–44. <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=112229798&lang=pt-br&site=ehost-live>
- World Flying Disc Federation (2019). *WFDF Congress. 49*(0).

Chapter 2

STUDY II

**Teamwork, Spirit of the Game and Communication:
A Review of Implications from Sociological Constructs
for Research and Practice in Ultimate Frisbee Games**

Social Sciences, 10(8), 300.

<https://doi.org/10.3390/socsci10080300>

Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games

José Pedro Amoroso^{1,2}, Jay Coakley³, Ricardo Rebelo-Gonçalves^{1,2,4}, Raul Antunes^{1,2,5}, João Valente-dos-Santos^{4,6}, Guilherme Furtado^{4,7}

¹Institute Polytechnic of Leiria: Leiria, PT, ²CIEQV- Life Quality Research Center: Rio Maior, Leiria, PT, ³University of Colorado in Colorado Springs, USA, ⁴CIDAF – The Research Unit for Sport and Physical Activity, Faculty of Sport Sciences and Physical Education, Coimbra, PT, ⁵Institute Polytechnic of Santarém School of Sports of Rio Maior: Rio Maior, Santarém, PT, ⁶Universidade Lusófona, CIDEFES: Lisboa, PT, ⁷Health Sciences Research Unit: Nursing (UI-CISA: E) - Nursing School of Coimbra (ESENfC), Coimbra, PT

Funding This work was partially supported by Erasmus + Project Villages on Move Network (VOMNET) with number 603120-EPP-1-2018-1-FI-SPO-SSCP, and by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Abstract

Background: Ultimate Frisbee (UF) is a non-contact, challenging and self-promoted team sport. It's characteristics, such as the game environment and rules, appear to influence the on-the-pitch behaviour of players. **Goals:** This article examines the content of qualitative studies to determine if and how the unique characteristics of UF may be related to nine sociological themes, that may be identified during game play. These themes include the following: a) competition and performance; b) enjoyment; c) communication; d) cooperation/friendship; e) behaviors/ welfare; f) teamwork/social skills; g) environment/lifestyle; h) rules/self-refereeing and i) spirit of the game (SOTG). **Method:** The review was conducted according to PRISMA guidelines. A comprehensive search protocol was used to identify, screen, and select published research articles under a Qualitative Systematic Review (QSR). The search was occurred from 1st June to 30th December 2020 with no limitations regarding the year of publication. Original English-language papers that contained relevant data regarding sociological themes and UF

were selected. As a result, nine papers were qualified to be included in the final version of QSR. The files analyzed were clearly structured with MAXQDA. **Results:** A total of 521 references were identified and selected for analysis. After the Screening (n= 301) and Eligibility (n = 71) phases, a total of 30 potential papers were selected and classified. The majority of those articles were eliminated based on inappropriate aims and themes. Nine studies were included in the final analysis. The three most cited sociological themes in these studies were: communication, teamwork/social skills, and spirit of the game. **Discussion:** Research suggests that UF involves patterns of interaction related to communication and spirit of the game that encourage active lifestyles. Finally, we point out that UF is an appropriate sport to include in physical education classes in which the creation of positive relationships between students is a desired outcome. This topic should be explored further through interventional studies done in different contexts although the evidence suggests that UF offers players unique opportunities to experience a combination of physical activity and enjoyment.

Keywords: *Qualitative research, sport sociology, teamwork, spirit of the game, communication*

1. Introduction

This paper focuses on knowledge production in sociology as it occurs through systematic research strategies designed to maximize objectivity (Bourdieu, 1991). Our review of the research on Ultimate Frisbee (UF) indicates that the sport was first described by Clark, Hamilton, & Bowden in a 1981 article published in the *Journal of Physical Education and Recreation*. In subsequent years, UF has been studied and described as an attractive alternative to traditional team sports in physical education classes. Additionally, a pedagogical sequence called UF Curriculum was developed for physical educators who wanted to introduce this sport modality to students in the United States (Caporali, 1988). At the same time, experts have suggested that participation in UF helps to develop cognitive, psychomotor, and affective skills as well as general cardiovascular fitness (Caporali, 1988; Clark et al., 1981).

Our review of the published literature also indicates that researchers in the sports sciences and related fields have become increasingly interested in studying the characteristics and impact of UF on participants. Studies have focused on: i) physical, cardiovascular and metabolic demands in healthy adults and athletes (Krustrup & Mohr, 2015; Leicht et al., 2019; Weatherwax et al., 2015); ii) gender differences among school and university players (Neville, 2019; Piepiora et al., 2020); iii) and throwing biomechanics, disc trajectory and injury preven-

tion (Akinbola et al., 2015; Koeble & Seiberl, 2020). Recent research in sport sociology has paid special attention to the normative foundations of UF as they are connected with the rules of the sport and the ethical orientations and competitiveness of participants (Crocket, 2015, 2016; Griggs, 2009b).

Research over the last four decades suggests that participation in UF provides valuable experiences that make it more than a mere alternative to traditional ball sports (Caporali, 1988). Although more research is needed, existing studies report the following: **First**, the personality profile of the ultimate frisbee players is similar to the profile of players practicing other sports (Piepiora et al., 2020); **Second**, leadership behaviours among UF players foster acceptance of group goals and promote teamwork, players have high performance expectations and focus on task cohesion; and the acceptance of group goals and the emphasis on teamwork are associated with social cohesion among players (Callow et al., 2009); **Third**, participation in Ultimate Frisbee has effects that carry over into everyday life in society (Guette et al., 2019). **Fourth**, the “spirit of the game” (SOTG), a cultural dimension of the sport, emphasizes self-enforcement of rules and respect for opponents and influences how players manage unethical actions and avoid a normative focus on winning at all cost (Griggs, 2011). Our intent in this paper is to analyse selected qualitative studies to identify unique social dynamics associated with playing UF.

In this review of research on UF, it was decided that qualitative research would provide the most useful insights into the social dynamics of the game, the experiences of participants, and in the usefulness of UF in physical education courses.

Qualitative research methods are used when the goal is to discover the motives and meanings that underlie what people say and do, or when it is important to understand the precise details of what occurs in specific kinds of relationships, groups, and social contexts, such as playing a particular sport (Kuper et al., 2008). For example, qualitative methods might be used to discover and understand the conditions under which young people choose to play a sport, the meanings that they give to their sport experiences, and how those experiences are integrated into the rest of their lives. Sociologists frequently use qualitative methods when studying the social dynamics involved in sport participation, especially when participation occurs in a new or unique form of sport.

Collecting data through observations and interviews is time intensive. The validity and reliability of data depend on the researcher being able to develop relationships so there is trust and rapport developed with the people being studied. The goal of sociologists who do observational research and conduct in-depth interviews is often to deepen or challenge existing knowledge about social phenomena or explore and present baseline information about social experiences, situations, and events about which little is known. This baseline information is

then use to formulate subsequent research, both qualitative and quantitative, that study particular social phenomena from multiple vantage points.

Because interpretation is a core feature of qualitative research, it is important that the researcher be critically self-reflective during the entire research process. In practical terms, the researcher is a subject and an object in the research process. This does not destroy objectivity, but it challenges the researcher to be aware of their own vantage point and relationship with what is being studied (Bourdieu, 1991; Bourdieu & Wacquant, 1992; Hill, 2020; O'Brien et al., 2006).

We also chose to focus on qualitative research because we were concerned with two characteristics of UF that distinguish it from other sports: self-officiation and SOTG (B. Robbins, 2004). To our knowledge, little research has focused on the sociological themes that may be characteristic when in Ultimate Frisbee is played. Our objective in this qualitative systematic review (QSR) was to explore how the unique characteristics of UF are related to the following nine sociological themes as UF is played: a) competition/performance; b) enjoyment; c) communication; d) cooperation/friendship; e) behaviors/welfare; f) teamwork/social skills; g) environment/lifestyle; h) rules/self-refereeing and i) SOTG.

2. Materials and Methods

The research team decided that to improve the accuracy of the search in the different databases, the search terms should be selected in advance. This is because the tools to assist meta-search change depending on each database. The keywords as agreed by the authors were the following: “frisbee”, “flying disc”, “frisbee” OR “flying disc”, “frisbee” OR “Flying disc” AND “sports”; “ultimate frisbee”; “frisbee” OR “flying disc” OR “disco voador” and “ultimate frisbee” AND “sociology” (Table 1). The goal was to identify relevant articles in this conceptual realm. The inclusion criteria for these articles were studies published in English in peer-reviewed journals, and the search occurred from 1st June to 30th December 2020. Articles were searched across multiple academic disciplines (e.g. title, abstract, text) and each article was independently examined by (J.P.A.) and (G.E.F.) to assess its quality.

The quality of the articles was assessed by using evaluative criteria developed by members of the EPPI-Center (Evidence for Policy and Practice Information Co-ordinating Centre) (Harden et al., 2004) and other specialists (Martins et al., 2014; Popay et al., 2006). Exclusion criteria were studies unrelated to the context of UF. Studies with no abstract available for screening and those not available English translation were also excluded.

Finally, nine papers were qualified to be included in the final version of QSR. (Table 1) shows the key terms used in the respective databases during the first phase, considering the number of articles generated from the different entries with the isolated or combined terms. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were applied while conducting the review (Liberati et al., 2009; Moher et al., 2015).

	“Frisbee”	“Flying disc”	“Frisbee” or “flying disc”	“Frisbee” or “flying disc” or “disco voador”	“Frisbee” or “flying disc” and “sports”	“Ultimate frisbee”	“Ultimate frisbee” and “sociology”
Pubmed (mediline)	260	6	262	1425	31	17	0
Web of science	213	22	212	212	197	53	3
Apa psycinfo	43	2	45	68	43	15	1
B-on	9821	235	10005	10041	9821	1963	494
Eric	30	0	30	31	30	10	10
Sportdiscus	92	6	96	102	94	48	6
Psychology & behavioral sciences	11	2	11	13	11	2	2
Academic search complete	335	11	342	880	338	42	5
Scielo	5	5	5	11	3	0	0
Cochrane data base	7	1	8	9	0	0	0
Total of records	10817	941	11016	12792	10568	2150	521

Table 1 – Search terms used depending on the different databases and the number of articles generated in the pilot search

The analysis involved a process in which findings were identified, classified and coded (O'Connor & Penney, 2021). The first author (J.P.A.) conducted the coding analysis of the text. Analytic documentation refers to decisions made in coding, categorizing, and comparing data (Sandelowski & Barroso, 2003). The second phase was to identify if any of the nine sociological themes in discussions of the social dynamics during the playing of Ultimate Frisbee. The second author (G.E.F.) made the verification process, coding a randomly selected sub-set of the selected papers, and undertaking additional checking of a sub-set of codes attributed within the other papers. The analysis was performed by (J.P.A.) using the software program MAXQDA® Analytics Pro 2020 software (release 20.03.0). The files analyzed were clearly structured with MAXQDA (folder structure); text-specific overviews with appropriate coding, codes and memos (Berlin, 2008).

(J.P.A.) was supervised by (G.E.F.) in the coding process. Regular twice-a-month meetings were conducted with the core study team (J.P.A., G.E.F.) over 6 months to reduce subjectivity. The analysis followed an inductive approach in which coding topics were derived

directly from the text data. An interpretive approach sets the scene for the analysis; it shapes the choice of methodology, and it informs the questions which the researcher asks of the text (Bohnsack, 2015). This process allowed us to uncover initial codes and to start conceptualizing thematic categories. According to the methodological characteristics listed in Table 02), a fundamental premise of grounded theory is to allow the key issues emerge rather than to force them into preconceived categories (Oktay, 2012; Charmaz, K. 1996).

In the third phase, codes were isolated by themes, within the initial codes such as attire, language, and relationship with the game. This was done to determine if playing UF had an impact on game characteristics (themes), such as: a) competition and performance; b) enjoyment; c) communication; d) cooperation/friendship; e) behaviors and welfare; f) teamwork/social skills; g) environment/lifestyle; h) rules/self-refereeing and i) spirit of the game.

Reference number /Author	Participants	Method	Type	Theme	Categories
1. Robbins, Blaine (2004) "That's cheap." The rational invocation of norms, practices, and an ethos in ultimate frisbee	10 8 -	Informal Interviews Observation Media analysis	University competitive	Norms Ethos Social dilemmas in Ultimate Frisbee	c) d) e) f) g) h) I)
2. Griggs, Gerald (2009) 'When a ball dreams, it dreams it's a Frisbee': the emergence of aesthetic appreciation within Ultimate Frisbee	20	Interviews Observation Media analysis	Competitive Social participation Self-initiated	Examines aesthetic elements in Ultimate Frisbee	b) c) d) e) f) g) h) I)
3. Griggs, Gerald (2009) 'Just a sport made up in a car park?': The 'soft' landscape of Ultimate Frisbee	30	Interviews Participant Observation Media analysis	Competitive Training Sessions Social Events	Examines Landscape Ethnographic approach	a) b) c) e) f) g) h) I)
4. Griggs, Gerald (2011) 'This must be the only sport in the world where most of the players don't know the rules': Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee	20	Interviews and "list mining" Participant Observation Researching (internet forums)	Competitive Training Sessions Social Events	'social contract' 'spirit of the game' viability of self-refereeing	a) b) c) e) f) g) h) I)
5. Robbins, Blaine G. (2012) Playing with fire, competing with spirit: Cooperation in the sport of ultimate	1 team	interviews field-notes	Competitive (open division)	follow the norms and values unique to Ultimate.	a) b) c) d) e) f) g) h) I)
6. Crocket, Hamish (2013) 'This is men's ultimate': (Re) creating multiple masculinities in elite open Ultimate Frisbee	18	interviews field-notes recording field notes Data sources	Elite (open division) training sessions National and international Tournaments	ethnographic approach	a) b) c) d) e) f) g) h) I)
7. Crocket, Hamish (2015) Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee	14	semi structured interviews textual analysis	social and competitive tournaments	ethnographic research Foucauldian Ethics Ascetic practices	a) c) d) e) f) g) h) I)
8. Crocket, Hamish (2016) An ethic of indulgence? Alcohol, Ultimate Frisbee and calculated hedonism	14	Interviews Media analysis	competitive and social tournaments	Featherstone's concept ethnographic project Foucault's ethics	a) c) d) e) f) g) h) I)
9. Neville, Joanna (2019) Dressed to play: An analysis of gender relations in college women's ultimate Frisbee	27	one-on-one interviews Transcription Coding	Practices Tournaments Social Events	ethnographic research Insight tensions within Ultimate Frisbee through exploring forms of dress	a) c) d) e) f) g) h) I)

Table 2 – Methodological characteristics of the included studies in the review (n=9)

3. Results

The data base search resulted in a total of 521 references as illustrated in the flowchart presented in Figure 01). The four-phase flow diagram identifies the final selection phases of the studies. Following the input of data into the software Mendeley version 1.19.8 all duplicates were deleted (n=220) Two reviewers (J.P.A., G.E.F.) performed an analysis to assess the relevance of all articles. No disagreements occurred. Articles were eliminated based on inappropriate aims and domains. In presenting findings, we note that much of the data relates to youth and adult participation in competitive and social tournaments. From the nine studies included in the analysis, we constructed a methodological interpretation of the studies included in the review (Table 03) in connection with the nine sociological themes. As noted in Table 04), the three most cited were: c) communication; f) teamwork/social skills; i) spirit of the game.

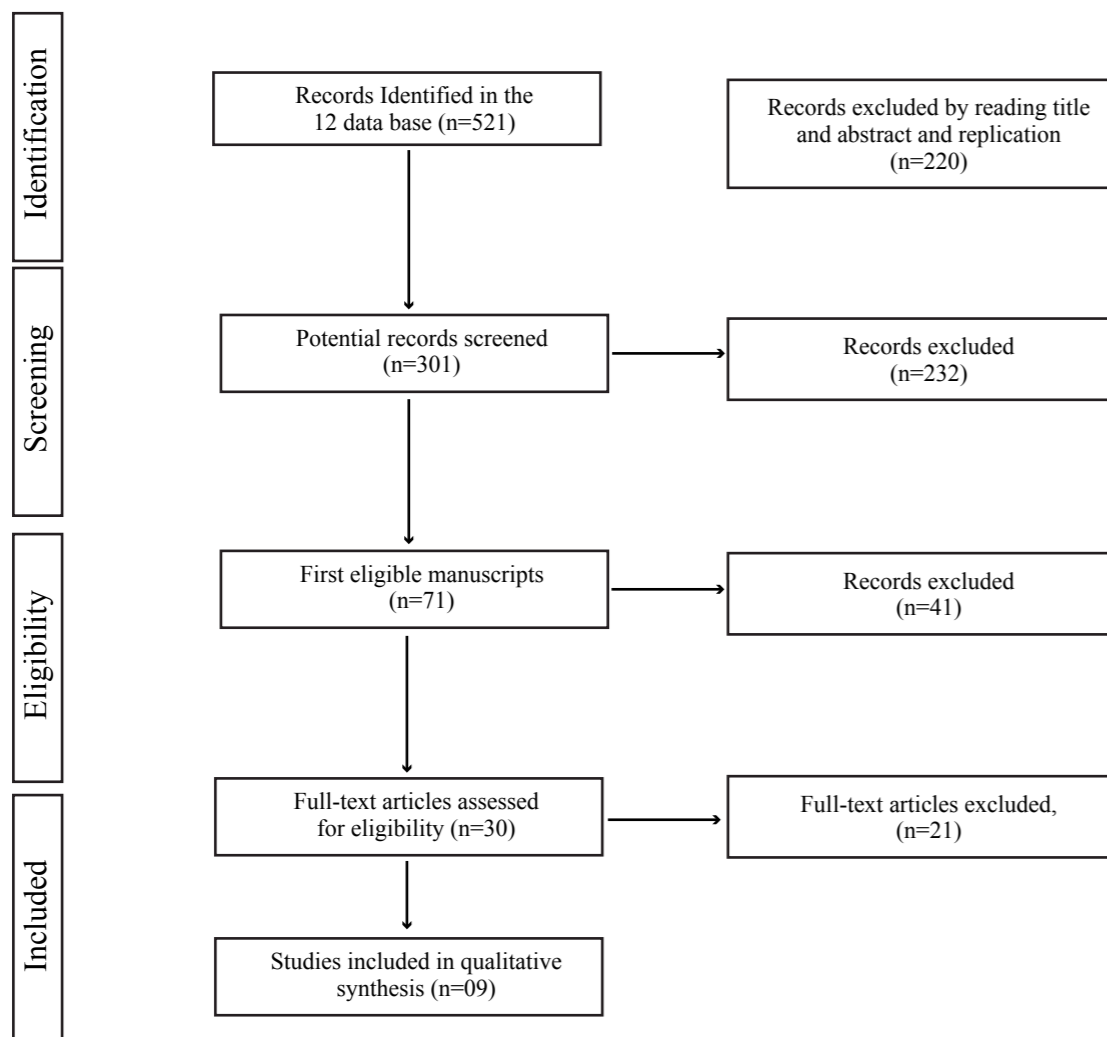


Figure 1 – Flowchart of studies included following PRISMA guideline

In presenting findings, we note that much of the data relates to youth and adult participation in competitive and social tournaments. From the nine studies included in the analysis, we constructed a methodological interpretation of the studies included in the review in connection with the nine sociological themes (Table 3). After categorization the characteristics involved in playing UF, results emerge from categories present in the nine studies: Behaviors and Welfare, SOTG, Rules, and self-refereeing.

Refs.number /Author	a) PC	b) EN	c) CO	d) CF	e) BW	f) TSS	g) EL	h) RSR	i) SE	Total
1. Robbins, Blaine (2004)	0	0	40	7	19	36	14	25	30	171
2. Griggs, Gerald (2009)	0	1	8	1	2	2	14	2	4	34
3. Griggs, Gerald (2009)	17	17	8	0	2	8	10	1	2	65
4. Griggs, Gerald (2011)	11	2	8	0	7	12	2	18	19	79
5. Robbins, Blaine G. (2012)	14	4	4	23	8	7	1	12	18	91
6. Crocket, Hamish (2013)	16	2	6	6	7	11	8	4	4	64
7. Crocket, Hamish (2015)	5	0	13	7	27	12	5	20	20	109
8. Crocket, Hamish (2016)	1	0	3	1	3	13	11	3	2	37
9. Neville, Joanna (2019)	14	0	11	8	6	27	4	3	7	80
Total	78	26	101	53	81	128	69	88	106	730

Table 3 - Methodological interpretation of the included studies in the review (n=9)

Notes: PC = Performance competition; EJ = Enjoyment; CO = communications; CF = Cooperation and Friendship; BW = Behaviors and Welfare; TSS = Teamwork and Social Skills; EL = Environment and Lifestyle; RSR = Rules and Self- refereeing; SE = SOTG and Ethical.

The concept map showed that the Teamwork and Social Skills, SOTG and Ethical, Communication, Rules, and Self- refereeing, and Behaviors and Welfare were the most frequent social constructs presented in all analyzed papers. In addition, the intensity of the lines shows the potential relationship between the constructs, where the emphasis goes to the connections between Teamwork and Social Skills, SOTG, and Ethical and Communication (Figure 2).

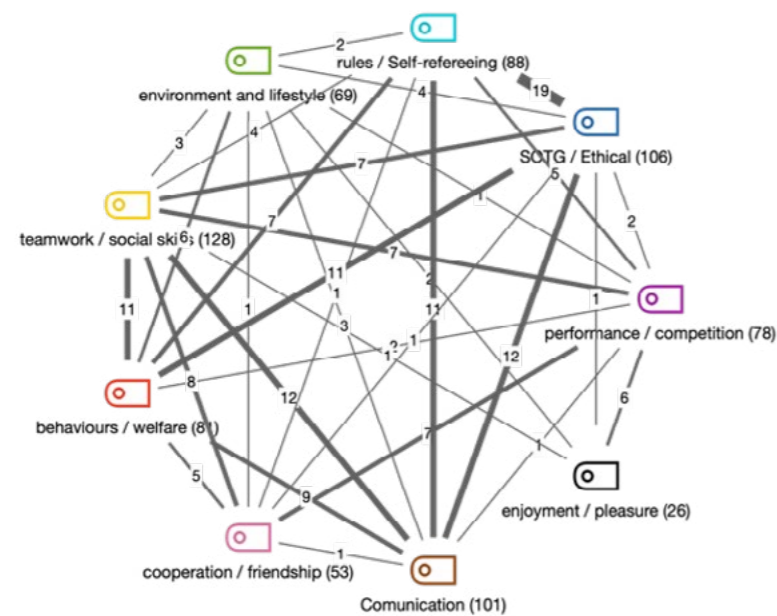


Figure 2. Conceptual map of interconnection between emerged categories.

Because UF is a self-refereeing sport, communication between players from different cultures is normal and depends on equivalence in thoughts and situations and not just equivalence in expressions (Acquadro et al. 2008). Many regular social players were indifferent about developing their skills and showed little interest in playing the game at an advanced level (Griggs 2009b). Nevertheless, many regular social players evinced a high degree of commitment to the game and the people with whom they played regularly (Kerins et al. 2007). Crucial to the development of team performance were the mediating (teamwork) processes of communication and conflict management (Smith et al. 2013). Majority of the analysed studies mentioned SOTG in different contexts but the ethos of SOTG is both a formalized and practiced part of UF (Spencer-Cavaliere et al. 2017).

All the categories were present in the majority of studies. Enjoyment was present in 5 studies (26 references) along with the assumption that rational thought interferes with feeling good (Bohnsack 2014). Competition/performance (78 references) was present in seven studies suggesting that even though UF is a team sport without referees, players are competitive, and team competitions differentially influence experiences related to performance, enjoyment, anxiety, and effort (Cooke et al. 2013). Behaviors/welfare (61 references) is also a theme present in all studies, even though others have noted that preoccupation with winning may be accompanied by a lack of concern for justice, fairness, and the welfare of others in competition (Lee et al. 2008).

Another important finding is that cooperation/friendship (53 references) was mentioned in seven studies indicating that because the sport is federally controlled and embedded in tiers of organizational constraint, competition is informally regulated through norms, reputations, and self-discipline respected by players (Robbins, 2012). Also important in this respect is that leaders in the field of play can promote cooperation among followers and encourage them to work together towards a common goal (Callow et al., 2009). In the case of female UF participants, an emphasis on social interaction/friendship tends to disrupt the outcome and dominance-oriented structures embedded in traditional competitive sport (Spencer-Cavaliere et al., 2017).

Another influential theme, environment/lifestyle (69 references) has been emphasized by the World Flying Disc Federation and Ultimate Players Association (UPA) since the 1970s as a key feature of UF as it is played for enjoyment outside of the traditional school setting (Caporali, 1988). In 2020 the #FRISBEELIFESTYLE emphasized that UF was organized around a lifestyle or an alternative way to play sport, but this has been given little attention in the research (Griggs, 2011). This overlooks the fact that UF, like other fringe cultures, is linked with lifestyles and communities that are expressed through music, clothing, equipment, and locations that set them apart from the dominant culture (Gieseler, 2019). This is important because experts often point out that a healthy lifestyle is an active process that first emerges during ontogenesis, especially during the maturity phase during which the background of an activity along with its norms and values constitute the environment in which people live (Pomohaci & Sopa, 2018).

4. Discussion

The objective of this research project was to summarize the findings of qualitative studies that focus on UF and nine selected sociological themes. Nine qualitative studies dealing with UF were identified through a systematic process. Although research on UF is scarce, the findings of the selected studies indicate that it has distinguishing social features such as self-refereeing, collective arbitration, auto-regulation and independent communication that make it a relatively unique team sport. For example, it is self-refereed even at world championship level, and players are expected to abide by a formal code of fair play that is constituted by the *SOTG*, one of the unique features of UF (Crocket, 2015).

Furthermore, UF is often played by small groups that are part of a larger and spatially dispersed self-governed sporting community (B. G. Robbins, 2012). This community embraces

a very specific language centered on the SOTG and emphasizing the importance of responsibility, respect, and honesty among players (B. G. Robbins, 2012). When UF is played informally among small groups of friends interested in having an enjoyable experience, the official rules may be replaced by informal norms that fit the situation so that play can be continuous and creative (Griggs, 2011).

Studies have also consistently supported the idea that the themes of behaviors/welfare, goal orientations/motivation for approach or avoidance influence performance norms and other behaviors (Fairbrother, 2017). Although teamwork/social skills is the theme most often represented in the nine studies, the data also reveal that these other themes foster the improvement of teamwork within small heterogeneous teams a feature that would be important to Physical Educators who are unsure about how to organize students with different skill abilities (Carpenter, 2010).

Additionally, cooperation/friendship is a theme that is a systemic and institutionalized aspect of SOTG. They are the foundation for an ethos comprised of an overarching system of norms that permeates all divisions and levels of competition. As a result, UF takes on the characteristics of a moral community organized around the spirit of the game (B. G. Robbins, 2012). The systemic approach to rules combined with self-refereeing encourages young people to strive for personal excellence and competitive success at the same time that they value fairness and respect for both the rules and their opponents (Lee et al., 2008). Overall, the environment and culture of UF is closely linked with the sport's origins as part of 'the alternative sports movement' of the 1960s (Bale 1994; Griggs, 2009a).

In conclusion, this review indicates that UF can help physical educators as they teach their classes and seek a strategy that promotes a commitment to communication and the norms linked to the SOTG. This makes it possible to facilitate the formation of a unique culture sustained by the student-players. The nine studies that we have reviewed in this project provide a strong support for creating positive social dynamics among players. Additional sociological research is needed to further investigate the ways that the nine social themes are a part of playing UF in different contexts. We presented directions for future research that appear new and particularly interesting.

Disclosure statement

No potential conflict of interest was reported by all authors.

Acknowledgements

We would like to thank the to the WFDF - World flying disc federation for all the sup-

port, and to the Erasmus + Village on move project team. Many thanks to our research team for all effort and contributions.

Funding

This work was partially supported by Erasmus + Project Villages on Move Network (VOMNET) with number 603120-EPP-1-2018-1-FI-SPO-SSCP, and by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Contributors

All authors contributed with their expertise for the final version of the manuscript.

Conceptualization: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, João Valente-dos-Santos, Guilherme Furtado; Data curation: José Pedro Amoroso, Jay Coakley, João Valente-dos-Santos, Guilherme Furtado; Formal analysis: José Pedro Amoroso, Jay Coakley, João Valente-dos-Santos, Guilherme Furtado; Funding acquisition: José Pedro Amoroso, João Valente-dos-Santos; Investigation: José Pedro Amoroso, Jay Coakley, Ricardo Rebelo-Gonçalves, Raul Antunes, João Valente-dos-Santos, Guilherme Furtado; Methodology: José Pedro Amoroso, Jay Coakley, Ricardo Rebelo-Gonçalves, Raul Antunes, João Valente-dos-Santos, Guilherme Furtado; Project administration: José Pedro Amoroso, João Valente-dos-Santos, Guilherme Furtado; Resources: José Pedro Amoroso, Jay Coakley, Ricardo Rebelo-Gonçalves, Raul Antunes, João Valente-dos-Santos, Guilherme Furtado

5. References

- Acquadro. (n.d.). *PDFlib PLOP : PDF Linearization , Optimization , Protection Page inserted by evaluation version Literature Review of Methods to Translate Health-Related Clinical Trials*.
- Akinbola, M., Logerstedt, D., Hunter-Giordano, A., & Snyder-Mackler, L. (2015). Ultimate frisbee injuries in a collegiate setting. *International Journal of Sports Physical Therapy*, 10(1).
- Berlin, K. S. (2008). Book Information. *Journal of African Studies*, 2008(73), 89–91. https://doi.org/10.11619/africa1964.2008.73_89
- Bohnsack, R. (2015). Document method. In *The SAGE handbook of qualitative data analysis*.
- Bourdieu, P. (1991). The peculiar history of scientific reason. *Sociological Forum*, 6(1), 3–26. <https://doi.org/10.1007/BF01112725>
- Bourdieu. P. & Wacquant, L.J.D. 1992. *An invitation to reflexive sociology*. Chicago IL: Uni-

- versity of Chicago Press.
- Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology, 21*(4), 395–412. <https://doi.org/10.1080/10413200903204754>
- Caporali, J. M. (1988). The Ultimate Alternative. *Journal of Physical Education, Recreation & Dance, 59*(7), 98–103. <https://doi.org/10.1080/07303084.1988.10606264>
- Carpenter, E. J. (2010). *THE TACTICAL GAMES MODEL SPORT EXPERIENCE : AN EXAMINATION OF STUDENT MOTIVATION AND GAME PERFORMANCE DURING AN ULTIMATE FRISBEE UNIT Submitted to the Dissertation Committee TESI Program at the University of Massachusetts at Amherst in partial fulfillment. May.*
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation, 52*(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Coakley, J. (2015). Assessing the sociology of sport: On cultural sensibilities and the great sport myth. *International Review for the Sociology of Sport, 50*(4–5), 402–406. <https://doi.org/10.1177/1012690214538864>
- Cooke, A., Kavussanu, M., McIntyre, D., & Ring, C. (2013). The effects of individual and team competitions on performance, emotions, and effort. *Journal of Sport and Exercise Psychology, 35*(2), 132–143. <https://doi.org/10.1123/jsep.35.2.132>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal, 32*(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Crocket, H. (2016). An ethic of indulgence? Alcohol, Ultimate Frisbee and calculated hedonism. *International Review for the Sociology of Sport, 51*(5), 617–631. <https://doi.org/10.1177/1012690214543960>
- Fairbrother, J. T. (2017). *Ego-Oriented Learners Show Advantage in Retention and Transfer of Balancing Skill. September.* <https://doi.org/10.1123/jmld.2017-0001>
- Gieseler, C. (2019). Learning to Fail: Adolescent Resistance in Extreme Sports. *Journal of Sport and Social Issues, 43*(4), 276–295. <https://doi.org/10.1177/0193723519842235>
- Gray, C., Gibbons, R., Larouche, R., Beate, E., Sandseter, H., Bienenstock, A., Brussoni, M., Chabot, G., Herrington, S., Janssen, I., Pickett, W., Power, M., Stanger, N., Sampson, M., & Tremblay, M. S. (2015). *What Is the Relationship between Outdoor Time and Physical Activity , Sedentary Behaviour , and Physical Fitness in Children ? A Systematic Review. September.* <https://doi.org/10.3390/ijerph120606455>
- Griggs, G. (2009a). “Just a sport made up in a car park?”: The “soft” landscape of Ultimate Frisbee. *Social and Cultural Geography, 10*(7), 757–770. <https://doi.org/10.1080/14649360903205124>
- Griggs, G. (2009b). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society, 12*(10), 1317–1326. <https://doi.org/10.1080/17430430903204827>
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society, 14*(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Guette, M., Bonilla Cruz, N., & Hernandez-Peña, Y. (2019). El deporte como intervención del tejido social para la paz: estado del arte. *AVFT – Archivos Venezolanos de Farmacología y Terapéutica, 38*(5).
- Harden, A., Garcia, J., Oliver, S., Rees, R., Shepherd, J., Brunton, G., & Oakley, A. (2004). Applying systematic review methods to studies of people’s views: An example from public health research. *Journal of Epidemiology and Community Health, 58*(9), 794–800. <https://doi.org/10.1136/jech.2003.014829>
- Harden, A., Thomas, J., Cargo, M., Harris, J., Pantoja, T., Flemming, K., Booth, A., Garside, R., Hannes, K., & Noyes, J. (2018). Cochrane Qualitative and Implementation Methods Group guidance series—paper 5: methods for integrating qualitative and implementation evidence within intervention effectiveness reviews. *Journal of Clinical Epidemiology, 97*(2018), 70–78. <https://doi.org/10.1016/j.jclinepi.2017.11.029>
- Hill, L. (2020). A case for reflexivity in exercise science and sports medicine research. *Journal of Physical Education and Sport, 20*(3), 1505–1512. <https://doi.org/10.7752/jpes.2020.03207>
- Kerins, A., Scott, D., & Shafer, C. (2007). Evaluating the efficacy of a self-classification measure of recreation specialization in the context of Ultimate Frisbee. *Journal of Park and Recreation Administration, 25*(3), 1–22.
- Koebler, C., & Seiberl, W. (2020). Functional Adaptations in Isokinetic Performance and Shoulder Mobility in Elite Ultimate Frisbee Players. *Sportverletzung · Sportschaden.* <https://doi.org/10.1055/a-1023-4983>
- Krustrup, P., & Mohr, M. (2015). Physical Demands in Competitive Ultimate Frisbee. *Journal of Strength and Conditioning Research, 29*(12), 3386–3391. <https://doi.org/10.1519/JSC.0000000000000989>
- Kuper, A., Lingard, L., & Levinson, W. (2008). Critically appraising qualitative research. *Bmj, 337*(7671), 687–689. <https://doi.org/10.1136/bmj.a1035>

- Lam, V. L., & Corson, E. J. (2013). National and ethnic identification, intergroup attitudes, and sport participation in the context of the London Olympics. *British Journal of Developmental Psychology, 31*(4), 379–394. <https://doi.org/10.1111/bjdp.12014>
- Lee, M. J., Whitehead, J., & Ntoumanis, N. (2008). *Relationships Among Values, Achievement Relationships Among Values, Achievement Orientations, and Attitudes in Youth Sport. May 2014*. <https://doi.org/10.1123/jsep.30.5.588>
- Leicht, A., Connor, J., Doma, K., & Sinclair, W. (2019). Cardio-respiratory demands of Ultimate Frisbee in elite male athletes during a national championship. *Journal of Science and Medicine in Sport, 22*(2019), S64. <https://doi.org/10.1016/j.jsams.2019.08.267>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of Clinical Epidemiology, 62*(10), e1–e34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>
- Martins, J., Marques, A., Sarmiento, H., & Carreiro Da Costa, F. (2014). Adolescents' perspectives on the barriers and facilitators of physical activity: A systematic review of qualitative studies. *Health Education Research, 30*(5), 742–755. <https://doi.org/10.1093/her/cyv042>
- Neville, J. (2019). Dressed to play: An analysis of gender relations in college women's ultimate Frisbee. *International Review for the Sociology of Sport, 54*(1), 38–62. <https://doi.org/10.1177/1012690217712503>
- O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: A synthesis of recommendations. *Academic Medicine, 89*(9), 1245–1251. <https://doi.org/10.1097/ACM.0000000000000388>
- O'Connor, J., & Penney, D. (2021). Informal sport and curriculum futures: An investigation of the knowledge, skills and understandings for participation and the possibilities for physical education. *European Physical Education Review, 27*(1), 3–26. <https://doi.org/10.1177/1356336X20915937>
- Oktay, J. S. (2012). Grounded Theory. *Grounded Theory, 1*–192. <https://doi.org/10.1093/acprof:oso/9780199753697.001.0001>
- Piepiora, P., Sadowska, M., & Supiński, J. (2020). The personality profile of ultimate frisbee players based on gender. *Quality in Sport, 5*(4), 28. <https://doi.org/10.12775/qs.2019.022>
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., & Britten, N. (2006). Narrative Synthesis in Systematic Reviews: A Product from the ESRC Methods Programme. *ESRC Methods Programme, 2006*, 93. <https://doi.org/10.13140/2.1.1018.4643>
- Robbins, B. (2004). “That’s cheap.” The rational invocation of norms, practices, and an ethos in ultimate frisbee. *Journal of Sport and Social Issues, 28*(3), 314–337. <https://doi.org/10.1177/0193723504266992>
- Robbins, B. G. (2012). Playing with fire, competing with spirit: Cooperation in the sport of ultimate. *Sociological Spectrum, 32*(3), 270–290. <https://doi.org/10.1080/02732173.2012.663713>
- Sandelowski, M., & Barroso, J. (2003). Methodology Project. In *Qualitative Health Research* (Vol. 13, Issue 6). <https://doi.org/10.1177/1049732303255474>
- Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise, 14*(2), 249–257. <https://doi.org/10.1016/j.psychsport.2012.10.002>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies, 36*(3), 329–340. <https://doi.org/10.1080/02614367.2015.1105859>
- Tong, A., Palmer, S., Craig, J. C., & Strippoli, G. F. M. (2016). A guide to reading and using systematic reviews of qualitative research. *Nephrology Dialysis Transplantation, 31*(6), 897–903. <https://doi.org/10.1093/ndt/gfu354>
- Vella, S. A., Swann, C., & Tamminen, K. A. (2021). Reflections on the Field of Mental Health in Sport: Critical Issues and Ways of Moving Forward. *Journal of Applied Sport Psychology, 33*(1), 123–129. <https://doi.org/10.1080/10413200.2020.1854898>
- Weatherwax, R. M., Byrd, B. R., Van De Velde, S., & Dalleck, L. C. (2015). The Cardiovascular and Metabolic Responses To Ultimate Frisbee in Healthy Adults. *Journal of Fitness Research, 4*(3), 36–44. <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=112229798&lang=pt-br&site=ehost-live>.

Chapter 3

STUDY III

Dispositional Orientations in Competitive Ultimate Frisbee Athletes (Clima Motivational en Ultimate Frisbee)

Accepted in Cuadernos del Deporte - 712904

24th September 2021

Dispositional Orientations in Competitive Ultimate Frisbee Athletes (Clima Motivational en Ultimate Frisbee)

José Pedro Amoroso^{1,2}, Raul Antunes^{1,2,3}, João Valente-dos-Santos^{4,5}, Guilherme Furta-
do^{5,6,7}, Ricardo Rebelo-Gonçalves^{1,2,5}

¹Polytechnic Institute of Leiria: Leiria, PT, ²CIEQV- Life Quality Research Center: Rio Maior, Leiria, PT, ³Polytechnic Institute of Santarém School of Sports of Rio Maior: Rio Maior, Santarém, PT, ⁴CIDEFES – Centro de Investigação em Desporto, Educação Física e Exercício e Saúde, Lusófona University: Lisboa, PT, ⁵CIDAF – The Research Unit for Sport and Physical Activity (UID/PTD/04213/2020), University of Coimbra: Coimbra, PT, ⁶N2i - Institute Polytechnic of da Maia: Maia, PT, ⁷Health Sciences Research Unit: Nursing (UICISA: E) – Nursing School of Coimbra (ESENfC), Coimbra, PT

Funding This work was supported by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Abstract

The purpose of this study was to analyze dispositional orientations among Ultimate Frisbee (UF) athletes according competitive divisions. Data was collected during the European Beach Ultimate Championship (EBUC) 2019. The sample comprised a total of 484 athletes (34.7±9.7 years of age), from 19 countries. Participants were asked to fill in a sociodemographic questionnaire, and the Perception of Success Questionnaire (POSQ). Participants were grouped in eight competitive divisions: Mixed ($n=123$), Grand master men's ($n=61$), Master mixed ($n=59$), Master men's ($n=57$), Great grand master men's ($n=52$), Master women's ($n=51$), Men's ($n=50$) and Women's ($n=31$). The POSQ demonstrated a reasonable internal consistency, with the inter-item reliability coefficients ranging from 0.81 to 0.90. An analysis of Variance (ANOVA) was used to compare goal orientation by UF divisions (i.e., women's, men's, mixed, master women's, master men's, master mixed, grand master men's, great grand master men's). On average, UF athletes reported higher levels of perceived task orientations (4.17±0.80 vs. 3.13±0.82). Multivariate analysis of variance demonstrated that there was a significant main

effect of UF division on the POSQ scores. The Women's, Men's and Mixed presented the higher task values (4.27 ± 0.72 , 4.32 ± 0.78 , and 4.35 ± 0.67 , respectively), while the Master women's division presented the highest ego score (3.61 ± 0.71). Our findings indicated that success among UF athletes is defined in self-referenced terms, such as through mastering tasks or improving one's own personal skills. Further studies are necessary to understand the dispositional orientation between athletes of different divisions, since there are a variety of environmental and social variables that can be promoted and influence the observed differences.

Keywords: *achievement goal theory, motivation, team sport*

Resumo

O principal objetivo deste estudo foi analisar as orientações disposicionais entre atletas de Ultimate Frisbee (UF), de acordo com as diferentes divisões. Os dados foram recolhidos durante o European Beach Ultimate Championship (EBUC) 2019. A amostra foi composta por 484 atletas (34.7 ± 9.7 anos de idade), de 19 países. Os participantes foram convidados a preencher um questionário sociodemográfico de caracterização individual, e o Perception of Success Questionnaire (POSQ). Os participantes foram agrupados em oito divisões competitivas: Misto ($n=123$), Grand master masculino ($n=61$), Master misto ($n=59$), Master masculino ($n=57$), Great grand master masculino ($n=52$), Master feminino ($n=51$), Masculino ($n=50$) e Feminino ($n=31$). O POSQ demonstrou uma consistência interna razoável, com coeficientes de confiabilidade entre itens variando de 0,81 a 0,90. Uma análise de variância (ANOVA) foi usada para comparar a orientação do objetivo por divisões de UF, ou seja, Feminino, Masculino, Misto, Master feminino, Master masculino, Master misto, Grand master masculino, Great grand master masculino. Em média, os atletas de UF revelaram níveis mais elevados de orientações de tarefas percebidas (4.17 ± 0.80 vs. 3.13 ± 0.82). A análise de variância multivariada demonstrou que houve um efeito principal significativo da divisão de UF nos scores do POSQ. As categorias Feminina, Masculina e Mista apresentaram os maiores valores para a tarefa (4.27 ± 0.72 , 4.32 ± 0.78 e 4.35 ± 0.67 , respetivamente), enquanto a divisão Master feminina apresentou o maior score para o ego (3.61 ± 0.71). Os nossos resultados indicaram que o sucesso entre os atletas de UF é definido em termos auto-referenciados, através do domínio de tarefas ou da melhoria das próprias habilidades pessoais. Mais estudos são necessários para entender a orientação disposicional entre atletas de diferentes categorias, uma vez que há uma diversidade de variáveis ambientais e sociais que podem ser promovidas e influenciar nas diferenças observadas.

Palavras-chave: *Teoria da realização dos objetivos, motivação, desportos coletivos*

Resumen

El objetivo principal de este estudio fue examinar la orientación disposicional entre los atletas de Ultimate Frisbee (UF), según las diferentes divisiones. Los datos fueron recolectados durante el European Beach Ultimate Championship (EBUC) 2019. La muestra estuvo formada por 484 deportistas ($34,7 \pm 9,7$ años) de 19 países. Se pidió a los participantes que completaran un cuestionario sociodemográfico de caracterización individual y el Perception of Success Questionnaire (POSQ). Los participantes se agruparon en ocho divisiones competitivas: Mixto ($n = 123$), Gran máster para hombres ($n = 61$), Máster mixto ($n = 59$), Máster para hombres ($n = 57$), Gran máster para hombres ($n = 52$), Máster femenino ($n = 51$), Masculino ($n = 50$) y Femenino ($n = 31$). El POSQ demostró una coherencia interna razonable, con coeficientes de fiabilidad entre elementos que oscilan entre 0.81 y 0.90. Se utilizó un análisis de varianza (ANOVA) para comparar la orientación de la meta por divisiones de UF, es decir, Femenino, Masculino, Mixto, Máster femenino, Máster masculino, Máster mixto, Grand máster masculino, Great grand máster masculino. En promedio, los atletas del UF revelaron niveles más altos de orientación a la tarea percibida (4.17 ± 0.80 frente a 3.13 ± 0.82). El análisis de varianza multivariado demostró que había un efecto principal significativo de la división UF en las puntuaciones POSQ. Las categorías Femenina, Masculina y Mixta presentaron los valores más altos para la tarea (4.27 ± 0.72 , 4.32 ± 0.78 y 4.35 ± 0.67 , respectivamente), mientras que la división Máster femenino presentó la puntuación más alta para el ego (3.61 ± 0.71). Nuestros resultados indicaron que el éxito entre los atletas del UF se define en términos autorreferenciales, mediante el dominio de tareas o la mejora de sus propias habilidades personales. Se necesitan más estudios para comprender la orientación disposicional entre deportistas de diferentes categorías, ya que existe una diversidad de variables ambientales y sociales que se pueden promover e influir en las diferencias observadas.

Palabras clave: *teoría del logro de metas, motivación, deportes de equipo*

1. Introduction

The understanding and enhancement of motivation in exercise and sport performance is quite challenging and it has been regularly studied based on the conceptual framework of the self-determination theory (SDT; Deci & Ryan, 1985). This theory focus on the “why” of a given behavior, considering the determinants and consequences of more or less autonomous and controlled reasons for participation, assuming that there are three basic psychological needs required for optimal functioning and well-being: experienced competence; autonomy and relatedness (Duda, 2013). The SDT assumes that autonomy support is the essential element for satisfying psychological needs (Almagro et al., 2015). Recently, Appleton et al. (2016) proposed a hierarchical conceptualization of the coach-created motivational climate that integrates the major social environmental dimensions emphasized within SDT and Achievement Goal Theory (AGT; Nicholls, 1989). On the other hand, the AGT is a social-cognitive theory that assumes that individual is an intentional, rational goal directed organism and that achievement goals govern achievement beliefs and guide subsequent decision making and behavior in achievement context (Roberts & Treasure 2012). The AGT considers the effects of two major domains: situational and dispositional. Situational determinants of behavior are related with the inherent factors in the context or environment, like the motivational climate created by coaches, for example, while dispositional variables are related with the individual’s orientations, that will more likely determine the probability of adopting a certain goal or action.

Nicholls (1979) theory was a useful framework to investigate the motivational effects stemming from the interactions between individuals and environment and was the first achievement motivation theory that provide effective answers about how to sustain optimum motivation for all level of ability (Ntoumanis, 2001; Roberts, 2012). A person state of motivational involvement may be seen to range a continuum from task involvement to ego involvement. Task and ego involvement are fluid and dynamic during a competitive event, and thus, difficult to capture the essence of the correct orientation (Gernigon & Arripe-longueville, 2004). Personal values are relevant in the field of sport, and they point to the importance of instilling human values of self-transcendence (transcending the personal in favor of the collective), transmitting competence and moral values in sport, and promoting task in the athlete, in order to foster prosocial attitudes and reduce unsportsmanlike attitudes during basketball practice (Adell et al., 2019). Elite samples, who persistently seek a level of performance, revealed the joint existence of both orientations is necessary (Bossio, 2009).

Perceptions of the motivational climate are influenced by the nature of relationships

with important social agents in the sport setting (Smith et al., 2006). The most important feature of AGT is that individual difference variables (self-schemas, personal theory of achievement, valence, dispositions, goal orientation) and situational variables (motivational climate, emergent schemas) are part of the same theory and are conceptually compatible (Roberts, 2012).

In an attempt to measure whether people are prone to be Ego or Task involved in achievement tasks in sport, i.e., to measure dispositional goal orientations in sport (Biddle et al., 2003), the Perception of Success Questionnaire (POSQ) was proposed by Treasure & Roberts, (1994). Individual’s transitory state of task or ego involvement is also dependent on dispositional differences, namely the person’s degree of task and ego orientation. Situational and dispositional goal perspectives emerged as the best predictor of the variables targeted (Balaguer et al., 2002). Thus, perceived motivational climate and dispositional goal orientation appear to be two different dimensions of motivation in sport activities (Selfriz et al., 1992). The social context of sport has the potential to provide interaction experiences, which are particularly relevant in team sports (Kavussanu, 2007). Athletes should pursue high collective efficacy standards within their team. A person is carrying out multiple roles in an athlete’s motivational atmosphere, evaluative roles, training roles, competitive roles, associate social and emotional needs (Keegan et al., 2011). Also, the sports’ own nature and characteristics might influence the dispositional orientations in athletes (Amoroso et al., 2021).

Ultimate Frisbee (UF) is a fast paced, non-contact, mixed team sport played with a flying disc or frisbee (Griggs, 2011; Lam et al., 2021). The official field measures are 64 meters by 37.57 meters with 22.86 meters end zones, and an official match has a duration of 48 minutes, with two 24-minute halves (Caporali, 1988). Gathering attributes of a number of invasion games, such as American football and netball, into a simple, yet demanding game (Spencer-Cavaliere et al., 2017), UF is a self-refereed, tolerance requires players to give up a possible illicit advantage (Crocket, 2015). UF has other distinguishing features when compared to other team sports, such as: self-arbitration, auto-regulation, and independent communication, even at world championship level, where players are expected to abide by a code of fair play, Spirit of the Game (Crocket, 2015). The Spirit of the Game (SOTG) translates these characteristics, and to some extent, appear to modulate behaviors, actions, and some psychological aspects of the game (Spencer-Cavaliere et al., 2017). Some aspects of SOTG described since the beginning of the UF (Clark et al., 1981), such as: i) encouraging highly competitive play, but never at the expense of mutual respect between players; ii) play for pleasure and joy; iii) not accepting actions such as provoking opponents, encouraging intentional aggressions or even "win at all costs" behaviors, seem to encourage some researchers to understand the psychological dimension of UF (Griggs, 2009, 2011).

However, research on this theme in the context of sport has sought to understand UF athletes related with dispositional orientations. With this in mind, the aim of this study was to analyze the dispositional orientations among UF athletes according to the different playing divisions. Although the relevance of the study of the determinants (motivation) for participation is strong, and particularly the study of dispositional orientations, the assessment of these variables in the specific context of the UF has not yet been carried out. This will be a first rehearsal for that purpose.

2. Methods

2.1. Sample

The European Beach Ultimate Championship (EBUC) 2019 hosted 90 teams from 23 Nations to participate in a total of 8 divisions. The championship was held in Portimão, Portugal, from May 6th to 11th. From the total of 1350 athletes participating in the EBUC 2019, 484 agreed to take part in the present study. Each division is differentiated by age: Women's <30 years old; Men's <33 years old; Mixed < 33 years old; Master Women's >30 years old; Master Men's >33 years old; Master Mixed >33 years old (M) >30 years old (F); Grandmaster Men's >40 years old; Great Grandmaster Men's >48 years old.

The Mixed division was the largest with 18 participating teams. This was followed by the Men's and Master Men's divisions, with 14 teams each and followed by the Master Mixed division with 12 teams.

In UF gender ratio is a rule that is defined the number of (F/M) elements entering the field to play the point. The attacking team chooses the number of elements (female / male) to be on the field for that point. With the gender ratio (3:2 or 2:3) at the start of the game, after the first disc flip (disc possession draw), an additional disc flip happens with the winner selecting the gender ratio for the first point. For the second and third points the ratio must be the reverse of the first point. For the fourth and fifth points the ratio must be same as the first point. This pattern of alternating the ratio every two points repeats until the end of the game (WFDF et al., 2009). Grand Master Men's had 10 registered teams, and both Women's and Great Grand Master Men's had eight. The smallest division was Master Women's, with six registered teams. Participants were grouped according to eight competitive divisions (Table 1): mixed ($n=123$), grand master men's ($n=61$), master mixed ($n=59$), master men's ($n=57$), great grand master men's ($n=52$), master women's ($n=51$), men's ($n=50$) and women's ($n=31$).

	Women's	Men's	Mixed	Master women's	Master men's	Master mixed	Grand master men's	Great grand master men's	Total
Number of participants	31	50	123	51	57	59	61	52	484
Female	31	0	64	51	0	28	0	0	174
Male	0	50	59	0	57	31	61	52	310
Countries									
Austria	0	0	11	0	0	0	0	9	20
Belgium	0	0	18	0	0	0	11	0	29
Currier Island	5	0	15	0	8	12	0	10	50
Czech Republic	0	0	13	0	0	0	0	0	13
Denmark	1	0	0	13	0	0	0	0	14
Finland	0	0	0	0	0	15	0	1	16
France	0	0	1	0	14	0	5	7	27
Great Britain	9	0	0	13	2	1	10	0	35
Germany	0	10	13	15	0	0	0	8	46
Ireland	0	14	0	0	13	0	0	0	27
Italy	0	10	12	0	4	0	8	0	34
Latvia	13	0	0	0	0	0	0	0	13
Luxembourg	0	0	14	0	0	0	0	0	14
Poland	0	0	0	0	0	8	0	0	8
Portugal	0	14	13	0	0	10	15	0	52
Spain	0	0	0	0	7	0	0	0	7
Sweden	0	2	0	10	0	0	0	17	29
Switzerland	3	0	1	0	9	13	12	0	38
Ukraine	0	0	12	0	0	0	0	0	12

Table 1 – Number of participants per sex and UF division ($n=484$).

The participants, representing 19 countries, had an average age of 34.7 ± 9.7 years. Sport experience was expressed as years of participation in competitive UF at the club level, including registration with the respective national associations. Individual training information was obtained by interview on the day of observation and the years of formal national team representations confirmed in consultation with institutional records of the WFDF (Table 2). All athletes participated in regular training sessions ($1-4$ sessions \times week $^{-1}$; $30-100$ min \times session $^{-1}$) with their clubs. The average duration of the national ultimate competitions varies according to the competitive schedules of each national association.

	Unit	Range		Mean		Standard deviation
		Min	Max	Value	95% CI	
Chronological age	years	18.0	59.4	34.7	33.1 to 36.2	9.7
Sport experience	years	1	11	8.1	7.6 to 8.6	3.1
National team experience	years	1	11	3.6	3.0 to 4.1	3.3
Weekly training sessions	n	1	4	2.0	1.9 to 2.1	0.8
Weekly training volume	min	30	400	191.3	178.8 to 204.6	82.8

Table 2 – Descriptive statistics for chronological age and training information for the total sample.

2.2. Procedures

A sociodemographic questionnaire, and the Perception of Success Questionnaire (POSQ) were distributed by the “Spirit of the Game” captain in the first meeting, a day before the beginning of the tournament (5th May at 10PM). In this meeting between the research leader and the spirit captains, the need to administer the questionnaires apart from the competition was mentioned. Participants were asked to complete questionnaires alone and in a quiet environment. At meeting, instructions on how to fill in the questionnaire were provided, emphasizing that responses would be kept confidential, and answer should be as honest and spontaneous as possible. It was stressed that there were no right or wrong answers. The questionnaires required approximately five minutes to be completed. Due to the specific rules of the UF, we chose to use the questionnaires in English as a standardized language for all participants. To standardize the procedures, we also used the English qualifications, *Common European Framework of reference for languages* as an advantage. The delivery of the questionnaire was carried out in the end of the tournament in last captain meeting (11th May at 6 PM). The study was conducted in accordance with recognized ethical standards for research in sports sciences (Harriss et al., 2019) and followed the Declaration of Helsinki produced by the World Medical Association for research with humans. Participants were fully informed about the nature of the study and the procedures involving data recording. Participants were voluntary, could withdraw from the study at any time and provided informed consent before the questionnaire’s completion. Anonymity was guaranteed.

2.3. Instruments

A sociodemographic questionnaire was also applied (to collect data on nationality, chronological age, gender, sport experience, national team experience, weekly training sessions and weekly training volume). *Perception of Success Questionnaire* (POSQ) is considered one

of the best scales to meet the conceptual criteria of measure orthogonal achievement goals in sport (Duda & Whitehead, 1998). This instrument was prepared to measure the dispositional orientation of the achievement goals within the sports environment. Participants were asked to respond to the POSQ (Roberts et al., 1998), which includes 12 items like “when playing ultimate, I feel most successful when...” by circling one of the letters to the right of the statement that best indicates how you feel. A = strongly agree; B = . . .; C = Neutral; D = . . .; E = Strongly disagree for the composite reliability value of each sub-scale. The confirmatory factor analyses performed by Roberts et al. (1998) revealed that the POSQ is a reliable and valid instrument to measure achievement goal orientations in the context of sport and physical activity, both in adults and in children.

2.4. Statistical analysis

Descriptive statistics were calculated for training information and each subscale of the POSQ. The Cronbach’s Alpha values were computed and used as a measure of reliability. An analysis of Variance (ANOVA) was used to compare dispositional orientations by UF divisions (i.e., women’s, men’s, mixed, master women’s, master men’s, master mixed, grand master men’s, great grand master men’s). Alpha level was set at 0.05. If a comparison was significant among UF divisions, pairwise comparisons with Tukey’s honestly significant difference test was used to identify which groups differed. Statistical analyses were done with SPSS version 27.0 (SPSS Inc., IBM Company, N.Y., USA).

3. Results

Descriptive statistics for the total sample on the subscales of POSQ are presented in Table 3. On average, UF athletes reported higher levels of perceived task orientations. The POSQ demonstrated reasonable internal consistency (values of $\alpha = 0.90$ and $\alpha = 0.81$ for Task and Ego orientation, respectively) for the examined sample.

	Range		Mean		Standard deviation	Cronbach’s Alpha
	Min	Max	Value	95% CI		
Task	1	5	4.17	4.10 to 4.24	0.80	0.90
Ego	1	5	3.13	3.05 to 3.20	0.83	0.81

Table 3 – Descriptive statistics and internal consistency of the POSQ subscales for the total sample

Comparisons between UF divisions on the POSQ subscales are presented in Table 4. Scores demonstrated that there was a significant main effect for UF division. When we analyze the data referring to the eight divisions, the mixed division presents the higher task score, while the Master women's division presents the highest ego value. For the task subscale, the three divisions (women's, Men's and Mixed) have the highest values, and mixed athletes scored significantly higher than grand master men's. As for the ego subscale: Men's scored significantly higher than grand master men's and great grand master men's; and master women's score significantly higher than women's, mixed, master mixed, master men's, grand master men's and great grand master men's.

	Women's	Men's	Mixed	Master women's	Master men's	Master mixed	Grand master men's	Great grand master men's	F	p
Task	4.27±0.72	4.32±0.78	4.35±0.67 ^a	4.14±0.94	4.00±0.81	4.08±0.82	3.91±0.83	4.14±0.80	2.71	<0.01
Ego	2.91±0.67 ^b	3.39±0.97 ^c	3.11±0.84 ^d	3.61±0.71 ^e	3.13±0.76	3.12±0.67 ^f	2.91±0.87 ^h	2.82±0.77 ⁱ	5.54	<0.001

Table 4 – Means and standard deviations by UF divisions on the subscales of POSQ and results of ANOVAs.

^a mixed > grand master men's;

^b women's < master women's;

^c men's > grand master men's & great grand master men's;

^d mixed < master women's;

^e master women's > women's; mixed; master mixed; master men's; grand master men's & great grand master men's;

^f master men's < master women's;

^g master mixed < master women's;

^h grand master men's < men's & master women's;

ⁱ great grand master men's < men's & master women's.

4. Discussion

Although competition is an integral feature of sport, and to date, the distinction of this contexts has been largely overlooked in achievement goal research. The aim of this original study was to analyze dispositional orientations among Ultimate Frisbee (UF) athletes according to different divisions. UF athletes surveyed in this study revealed greater task-involving orientation. The variation of achievement goal orientations among UF athletes according to playing division revealed that mixed division athletes were more task-oriented than the other's divisions.

Task-involving climate is positively evaluated by athletes, further as demonstrated in several research studies, which is related to various positive consequences, as enjoyment or

effort (Almagro et al., 2015; Vazou et al., 2005) in-depth interviews were employed in order to identify the factors that underpin the motivational climate created by peers in youth sport. Methods: Individually and in small focus groups, 14 boys and 16 girls (N=30). Previous evidence showed that for task-involving climate the strongest indicator is having an important role in individual sports, while in team sports it is cooperative learning (Castro-Sánchez et al., 2018) currently the role of the sports psychologist is particularly relevant, being in charge of training the athlete's psychological factors. This study aims at analysing the connections between motivational climate in sport, anxiety and emotional intelligence depending on the type of sport practised (individual/team). According to the same authors, this significant and inverse relationship between motivational climate and individual and team sports is particularly highlighted by the greater group cohesion among team sports players. Nonetheless, even in collective sports the categorization according to competitive group could be a source of differentiation.

Our results observed a division-associated variation in dispositional orientation among UF athletes. This result is an interesting indicator about the possibility of athletes participating in mixed divisions, including both men and women in the team, perceive their performance by more self-referenced criteria. However, these indicators are not confirmed by comparing with the other divisions. The question arises whether mixed teams are more task-involving than the master's and grand masters divisions, where age / experience can be a differentiating element. It has been suggested by van de Pol et al. (2012) that perceived motivational climate may be a more individual-level construct, rather than team-level. Consequently, the variability in perceived climate in sport could be better understood considering the athletes intra-individual experiences across training and competition, although the present study only focused on competition. Regarding the ego-involving, Master Women's division scored significantly higher than the other division's. According to a previous study (Kavussanu, Seal, and Phillips, 2006), as athletes emerge in the sports system, there is an increase in the emphasis over competitive aspects and normative skills, which may explain a trend for a higher ego-involving.

For the task subscale, the three most competitive divisions (women's, Men's and Mixed) present the highest values. UF is somewhat unusual as a team sport insofar as it is self-refereed even at world championship level, and athletes are expected to abide by a code of fair play, Spirit of the Game (Crocket, 2015). The individual features of UF as a team sport, could be capable to improve motivational climate. In fact, several authors suggested that task-involving climate is positively associated with moral variables (Boardley & Kavussanu, 2010; Cervelló et al., 2004; Gonçalves et al., 2010; Kavussanu & Ntoumanis, 2003), collective efficacy (Domínguez-Escribano et al., 2017), cooperation (Lameiras et al., 2014), and positive experiences in sport (MacDonald, Dany J.; Côté, Jean; Eys, Mark; and Deakin, Janice, 2011). The results

suggest that UF highlights a culture focused on self-assessment and communication, with a variety of environmental and social dynamics. A task-involving climate is created when the focus is on personal skill development regardless of how others perform (Macdonald et al., 2011). Task-involving climate provides an important intervention information to professionals whose responsibility is to lead the team to achieve task orientation goals such as coaches, and physical education teachers. According to Kavussanu, Seal, and Phillips (2006) there is evidence to suggest that achievement goals and the motivational climate play an important role in the various aspects of morality. It is possible that these variables suffer changes over the ages, and that these changes have implications for the social behavior of athletes. The same authors state that as athletes emerge in the sports system, there is an increased emphasis on competitive aspects and normative skills, with older athletes being able to perceive a motivational climate that is more ego-oriented than task-oriented, and thus, the likelihood of engaging in inappropriate behavior is higher. In UF, self-refereeing creates a form of ideological social control whereby rule violations and disputes are dealt with through a well-established ‘ritual’ of resolution between any two given players in a way that maximizes game flow (Griggs, 2011). Further, transformational leadership and highlight the utility of examining leadership behaviors, a fruitful area of research that has the potential to influence positively on many aspects of team functioning and performance (Callow et al., 2009).

Certain limitations of the current study should not be overlooked. First, we examined the theories from a quantitative perspective. Qualitative research would be useful for enlightening the formulation of flow experiences in a sport setting and its relationship to an athlete’s goal orientations. The choice of survey language should be primarily determined by respondent’s language proficiencies (Anne-Wil Harzing et al., 2011). Unfortunately, it was not possible to find all the native languages validated questionnaires of participants in EBUC. So, a uniform version in the English language was used. Secondly, and although a variation associated to group categorization was noted in the present study, it is not possible to clearly explain these differences since there are several factors that might influence the athlete’s perception, such as age, experience, gender, or coaching motivational climate. In dispositional orientation was noted. It would be also of interest for future research to examine mixed teams in others team sports competition. This knowledge could provide athletes the opportunities to better recognize their needs and feelings. For example, in the design of a training session, the coach can give athletes the challenge to play with all team. Feedback must be focused on the developmental process and effort and not in sport results or any normative reference, something that is highly promoted during UF competitions or training. So, coaches can help athletes to focus on mastery instead of results. If coaches are not aware to highlight the best attitudes after good performanc-

es, it is possible to lose the opportunity to enhance the athlete perception of sport achievement. Therefore, we encourage coaches to balance team’s ratio, to promote a good teamwork. As a self-refereed team-sport, UF has the potential to promote teamwork, task cohesion, leadership, and increase friendship-approach goals (Amoroso et al., 2021). It will be important to monitor these variables through time and in the context of training. Thus, it may provide useful data for the improvement of the profession and for the following investigations (Chirivella, 2016; Romero et al., 2018). Finally, future research could extend the current study by examining the effects of team competition on SOTG and performance as a function of group size, with the same or larger groups than employed here.

5. Conclusion

In conclusion, we have provided evidence to indicate that high task orientations of Ultimate Frisbee athletes defines success in self-referenced terms, such as through mastering tasks or improving one’s own personal skills. Different divisions were differentially influence by dispositional orientations, mixed division presents the higher task score, while the Master women’s division presents the highest ego value. For the task subscale, the three divisions (women's, Men's and Mixed) have the highest scores. There are a variety of environmental and social variables that can influence the observed differentiated dispositional orientation between athletes of different divisions. It would be of interest to understand these differences by isolating some of these variables (e.g., age, gender, experience, training volume, or coach-created motivational climate).

Acknowledgments: We would like to thank the to the WFDF - World flying disc federation for all the support, and to the Erasmus + Project Villages on Move Network (VOMNET) with number 603120-EPP-1-2018-1-FI-SPO-SSCP, and by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020. Many thanks to our research team for all effort and contributions.

Conflicts of Interest: No potential conflict of interest was reported by all authors.

Contributors

José Amoroso and João Valente-dos-Santos participated in the design of the scope. Ricardo Rebelo-Gonçalves focused on the introduction, methodology and discussion sections. Guilherme

Furtado and Raul Antunes reviewed and edited the manuscript. João Valente-dos-Santos also worked in the methodology and results. All authors contributed with their expertise for the final version of the manuscript.

6. References

- Adell, F. L., Castillo, I., & Álvarez, O. (2019). Personal and sport values, goal orientations, and moral attitudes in youth basketball. *Revista de Psicología Del Deporte*, 28(3), 100–105.
- Almargo, B., Bunuel, P., Moreno-Murcia, J., & Spray, C. (2015). Motivational factors in young spanish athletes: A qualitative focus drawing from Self-Determination theory and Achievement Goal perspectives. *The Sport Psychologist*, 29, 15-28. doi:10.1123/tsp.2013-0045
- Álvarez, O., Walker, B., & Castillo, I. (2018). Examining motivational correlates of mental toughness in Spanish athletes. / Examinando correlatos motivacionales de la dureza mental en deportistas españoles. *Cuadernos de Psicología Del Deporte*, 18(1), 141–149. <http://ezproxy.baylor.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=128707849&site=ehost-live&scope=site>
- Amoroso, J.P., Rebelo-Gonçalves, R., Antunes, R., Coakley, J., Teques, P., Valente-dos-Santos, & Furtado, G.E. (provisionally accepted). Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games. *Frontiers in Psychology*. doi: 10.3389/fpsyg.2021.712904
- Anne-Wil Harzing, Reiche, B. S., & Pudelko, M. (2011). Challenges in International Survey Research: a Review With Illustrations and Suggested Solutions for Best Practice. *European Journal of International Management*.
- Appleton, P., Ntoumanis, N., Queded, E., Viladrich, C., & Duda, J. (2016). Initial validation of the coach-created Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C). *Psychology of Sport and Exercise*, 22, 53-65. doi:10.1016/j.psychsport.2015.05.008
- Balaguer, I., Duda, J. L., Atienza, F. L., & Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise*, 3(4), 293–308. [https://doi.org/10.1016/S1469-0292\(01\)00025-5](https://doi.org/10.1016/S1469-0292(01)00025-5)
- Biddle, S. J. H., John Wang, C. K., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science*, 3(5), 1–20. <https://doi.org/10.1080/17461390300073504>
- Bond, M. H., & Yang, K. S. (1982). Ethnic affirmation versus cross-cultural accommodation: The Variable Impact of Questionnaire Language on Chinese Bilinguals from Hong Kong. *Journal of Cross-Cultural Psychology*, 13(2), 169–185. <https://doi.org/10.1177/0022002182013002003>
- Bossio, M. R. (2009). Lima motivational y orientacion de meta em futebolistas peruanos de primera division. 9, 5-19.
- Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009b). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology*, 21(4), 395–412. <https://doi.org/10.1080/10413200903204754>
- Caporali, J. M. (1988). The Ultimate Alternative. *Journal of Physical Education, Recreation & Dance*, 59(7), 98–103. <https://doi.org/10.1080/07303084.1988.10606264>
- Castro-Sánchez, M., Zurita-Ortega, F., Chacón-Cuberos, R., López-Gutiérrez, C. J., & Zafra-Santos, E. (2018). Emotional intelligence, motivational climate and levels of anxiety in athletes from different categories of sports: analysis through structural equations. *International journal of environmental research and public health*, 15(5), 894. <https://doi.org/10.3390/ijerph15050894>
- Cervelló Gimeno, E., Escartí, A., & Balagué Gea, G. (1999). Relaciones entre la orientación de meta disposicional y la satisfacción con los resultados deportivos, las creencias sobre las causas de éxito en deporte y la diversión con la práctica. *Revista de Psicología del deporte*, 8(1), 0007-19.
- Chirivella, E. C. (2016). La especialidad profesional en Psicología del Deporte. *Revista de Psicología aplicada al Deporte y al Ejercicio Físico*, 1(1), 2.
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, 52(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal*, 32(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Cumming, J., Hall, C., Harwood, C., & Gammage, K. (2002). Motivational orientations and imagery use: A goal profiling analysis. *Journal of Sports Sciences*, 20(2), 127–136. <https://doi.org/10.1080/026404102317200837>
- Domínguez-Escribano, M., Ariza-Vargas, L., & Taberner, C. (2017). Motivational variables involved in commitment of female soccer players at different competitive levels. *Soc-*

- cer and Society*, 18(7), 801–816. <https://doi.org/10.1080/14660970.2015.1067789>
- Duda, J. (2013). The conceptual and empirical foundations of Empowering Coaching™: Setting the stage for the PAPA project. *International Journal of Sport and Exercise Psychology*, 11(4), 311–318. doi:10.1080/1612197X.2013.839414
- Edi, F. R. (n.d.). *Inovação e Formação de Treinadores Desporto*, *Inovação e Formação de Treinadores*.
- Fransen, K., Vanbeselaere, N., Exadaktylos, V., Broek, G. Vande, de Cuyper, B., Berckmans, D., Ceux, T., de Backer, M., & Boen, F. (2012). “Yes, we can!”: Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences*, 30(7), 641–649. <https://doi.org/10.1080/02640414.2011.653579>
- Gernigon, C., & Arripe-longueville, F. (2004). on Goal Involvement States in Sport. *Education*, 572–596.
- Gould, D., & Pick, S. (1995). Sport Psychology: The Griffith Era, 1920-1940 Developments in Sport Psychology: 1920-1940. *The Sport Psychologist*, 9, 391–405.
- Griggs, G. (2009). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society*, 12(10), 1317–1326. <https://doi.org/10.1080/17430430903204827>
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society*, 14(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Hanrahan, S. J., & Biddle, S. J. H. (2002). Measurement of achievement orientations: Psychometric measures, gender, and sport differences. *European Journal of Sport Science*, 2(5), 1–12. <https://doi.org/10.1080/17461390200072502>
- Harriss, D. J., MacSween, A., & Atkinson, G. (2019). Ethical standards in sport and exercise science research: 2020 update. *International journal of sports medicine*, 40(13), 813–817.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kavussanu, M., Seal, A. R., & Phillips, D. R. (2006). Observed prosocial and antisocial behaviors in male soccer teams: Age differences across adolescence and the role of motivational variables. *Journal of Applied Sport Psychology*, 18(4), 326–344. <https://doi.org/10.1080/10413200600944108>
- Keegan, R., Harwood, C., Spray, C., & Lavalley, D. (2011). From “motivational climate” to “motivational atmosphere”: A review of research examining the social and environmental influences on athlete motivation in sport. *Sport Psychology*, March, 1–69.
- Lam, H., Kolbinger, O., Lames, M., & Russomanno, T. G. (2021). State Transition Modeling in Ultimate Frisbee: Adaptation of a Promising Method for Performance Analysis in Invasion Sports. *Frontiers in Psychology*, 12(May), 1–12. <https://doi.org/10.3389/fpsyg.2021.664511>
- Lameiras, J., Almeida, P. L., & Garcia-Mas, A. (2014). Relationships between cooperation and goal orientation among male professional and semi-professional team athletes. *Perceptual and Motor Skills*, 119(3), 851–860. <https://doi.org/10.2466/25.PMS.119c32z4>
- Lochbaum, M., Zazo, R., Çetinkalp, Z. K., Wright, T., Graham, K. A., & Konttinen, N. (2016). A meta-analytic review of achievement goal orientation correlates in competitive sport: A follow-up to Lochbaum et al. (2016). *Kinesiology*, 48(2), 159–173. <https://doi.org/10.26582/k.48.2.15>
- Méndez-Giménez, A., Fernández-Río, J., & Méndez-Alonso, D. (2015). Original Sport Education Model Versus Traditional Model : Effects on Motivation and Sportsmanship Modelo De Educación Deportiva Versus Modelo Tradicional : Efectos En La. *Revista Internacional de Medicina y Ciencias de La Actividad Fisica y Del Deporte*, 59, 449–466.
- Nicholls, J. G. (1979). Quality and equality in intellectual development: The role of motivation in education. *American Psychologist*, 34(11), 1071–1084. <https://doi.org/10.1037/0003-066X.34.11.1071>
- Ntoumanis, N. (2001). Empirical links between achievement goal theory and self-determination theory in sport. *Journal of Sports Sciences*, 19(6), 397–409. <https://doi.org/10.1080/026404101300149357>
- Roberts, G. C., & Treasure, D. (2012). *Advances in motivation in sport and exercise*. Human Kinetics.
- Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the perception of success questionnaire. *Journal of Sports Sciences*, 16(4), 337–347. <https://doi.org/10.1080/02640419808559362>
- Romero, J. R., Baidez, M. M., & Chirivella, E. C. (2018). Entrenamiento psicológico mediante el coaching motivacional en alto rendimiento: una experiencia en marcha atlética. *Revista de Psicología Aplicada Al Deporte y El Ejercicio Físico*, 3(2), 1–9. <https://doi.org/10.5093/rpadef2018a11>
- Selfriz, J. J., Duda, J. L., & Chi, L. (2016). The Relationship of Perceived Motivational Climate to Intrinsic Motivation and Beliefs about Success in Basketball. *Journal of Sport and*

- Exercise Psychology*, 14(4), 375–391. <https://doi.org/10.1123/jsep.14.4.375>
- Smith, A. L., Balaguer, I., & Duda, J. L. (2006). Goal orientation profile differences on perceived motivational climate, perceived peer relationships, and motivation-related responses of youth athletes. *Journal of Sports Sciences*, 24(12), 1315–1327. <https://doi.org/10.1080/02640410500520427>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies*. <https://doi.org/10.1080/02614367.2015.1105859>
- Tello, F. P. H., Martínez, L. N., Núñez, M. L., & Calvo, T. G. (2010). A structural model of goal orientation in sports: Personal and contextual variables. *Spanish Journal of Psychology*, 13(1), 257–266. <https://doi.org/10.1017/S1138741600003838>
- Treasure, D. C., & Roberts, G. C. (1994). Perception of Success Questionnaire: preliminary validation in an adolescent population. *Perceptual and Motor Skills*, 79(1 Pt 2), 607–610. <https://doi.org/10.2466/pms.1994.79.1.607>
- Van de Pol, P. K. C., Kavussanu, M., & Ring, C. (2012). Goal orientations, perceived motivational climate, and motivational outcomes in football: A comparison between training and competition contexts. *Psychology of Sport and Exercise*, 13(4), 491–499. <https://doi.org/10.1016/j.psychsport.2011.12.002>
- Vazou, S., Ntoumanis, N., & Duda, J.L. (2006). Predicting young athletes' motivational indices as a function of their perceptions of the coach- and peer-created climate. *Psychology of Sport and Exercise*, 7, 215–233. doi:10.1016/j.psychsport.2005.08.007
- WFDF, O., Ultimate, W., & Committee, R. (2009). *WFDF Rules of Ultimate 2009*. 1–17.

Chapter 4

STUDY IV

**Ultimate Frisbee Players: Characteristics according
to their Competitive Level and Spirit of the Game**

Submitted in PLOS ONE - PONE - D - 22 - 05656

24th february 2022

Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game

José Pedro Amoroso^{1,2}, João Valente-dos-Santos^{3,4}, Guilherme Furtado⁵, Ricardo Rebelo-Gonçalves^{1,2,4}, Raul Antunes^{1,2,6}, and Luís Calmeiro^{7,8}

¹ Polytechnic Institute of Leiria: Leiria, PT, ² CIEQV- Life Quality Research Center: Rio Maior, Leiria, PT, ³ CIDEFES - Centro de Investigação em Desporto, Educação Física e Exercício e Saúde, Lusófona University: Lisboa, PT, ⁴ Research Unit for Sport and Physical Activity (CIDAFA –uid/dtp/04213/2020), University of Coimbra, 3040 Portugal, ⁵ Instituto Politécnico da Guarda - Unidade de Investigação para o desenvolvimento do Interior (UDI) Guarda, PT, ⁶ Polytechnic Institute of Santarém School of Sports of Rio Maior: Rio Maior, Santarém, PT, ⁷ Abertay University, School of Social and Health Sciences, Dundee, UK, ⁸ Institute of Environmental Health, Faculty of Medicine, University of Lisbon, PT

Funding This work was supported by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Abstract

In Ultimate Frisbee (UF), players are responsible for administering and reinforcing adherence to the rules of the game. As a self-refereed sport, UF relies upon the Spirit of the Game (SOTG). The objectives of this study were twofold: [i] to profile the experience, training history, European Beach Ultimate Championship (EBUC) participation and goal orientations of international UF players and [ii] to evaluate the contribution of these variables in a discriminant function to classify players according to SOTG level and competitive level. The sample consisted of 160 athletes [females 33.8% (29.3±7.2 years); males 66.2% (37.6±9.7 years)] who were competing in the EBUC 2019. Factorial ANOVA was used to test the effect of sex (female vs. male), competitive level (highest vs. intermediate vs. lowest) and SOTG level (high vs. regular). Sex was not a consistent source of SOTG score variation among players. The interaction between SOTG level and competitive level was a consistent source of variation for all variables. High SOTG level players obtained a significantly higher SOTG classification derived

from a higher score on four of the five dimensions (i.e., high SOTG athletes committed fewer fouls and promoted less body contact, were fairer, demonstrated greater positive attitude, and better communication). However, high and regular SOTG level players did not differ in rules knowledge. Finally, Sex-related variation was negligible for UF experience, training history, SOTG dimensions and dispositional orientations suggesting that UF may be a tool to promote gender equity and female participation in sport. The highest SOTG index was observed in the players who trained more often and had more opportunities to play. These findings provide important information to coaches, PE teachers and sport consultants.

Keywords: *Teamwork, Sportsmanship, Self-refereeing, Competition, Flying Disc*

1. Introduction

Ultimate Frisbee (UF) is a fast paced, non-contact, mixed-gender team sport played with a flying disc or frisbee (Griggs, 2011). In its three versions, the game is played by two teams of seven players on grass, five players on the beach (Beach Ultimate) and four players indoors. Gathering attributes of a number of invasion games, such as American football and netball, into a simple yet demanding game (Spencer-Cavaliere et al., 2017), UF is a self-refereed game which requires players to give up possible illicit advantages. Hence, UF has distinguishing features when compared to other team sports, such as self-arbitration, and independent communication, even at a world championship level, where players are expected to abide by a code of fair play, known as Spirit of the Game (SOTG) (Crocket, 2015).

The SOTG can largely be built from five dimensions: rules knowledge, fouls and body contact, fair-mindedness, positive attitude and communication. These dimensions are used in the process of self-evaluation and opponent evaluation during official WFDF tournaments. The purposeful practice of each of these elements drives the growth of spirited players and teams. The SOTG is touted as the feature that most sets UF apart from other competitive team sports, as it primarily upholds the doctrine of sportsmanship. UF players recognize that they did not invent sportsmanship, but they insist that UF is different in that it does more than “pay lip service” to the concept. SOTG and the system of self-refereeing in UF seem to reflect the revival of a nineteenth-century ideal of sportsmanship and fair play (Pattison, 2011). SOTG puts these ideals into practice, and to some extent, appears to modulate behaviours, actions and some psychological aspects of the game (Spencer-Cavaliere et al., 2017).

Some aspects of SOTG, described since the beginning of the UF (Clark et al., 1981),

seem to encourage researchers to seek an understanding of the psychological dimension of UF (Amoroso, Coakley, et al., 2021a; Griggs, 2009, 2011). For example, promoting highly competitive play but never at the expense of the mutual respect among players, playing for pleasure and joy, not endorsing actions such as provoking opponents, encouraging intentional aggressions or even “win at all costs” behaviours, are unique to UF; therefore, it is argued that UF is an ideal context to promote sportsmanship behaviour.

The social context of sport provides interaction experiences, which are particularly relevant in team sports (Sage & Kavussanu, 2008). Coaches and athletes should pursue high collective efficacy standards within their team. These social interactions between coaches and athletes may also offer interesting insights into the UF atmosphere, within which a single person may perform multiple roles. These comprise a variety of dimensions such as evaluative, training and competitive roles, and roles associated with the meeting of social and emotional needs (Keegan et al., 2011). Such variety of roles creates a rich environment for the development of unique social dynamics.

In competitive sports, the importance placed on outcomes increases toward the end of the season. It is in the latter stages of the season that promotion, relegation, and championship places are decided (Sage & Kavussanu, 2008). Therefore, the cost of winning and losing is likely to result in stronger ego-involvement and weaker perceptions of a mastery-motivational climate. In an attempt to measure whether players are prone to be Ego or Task orientated, to measure goal orientations in sport (Biddle et al., 2003). To avoid this to happen, findings suggest that coaches should stress the importance of enthusiasm and communication and train their athletes to continue communicating, even when the team is losing (Fransen et al., 2012).

SOTG encourages UF players’ positive interaction by emphasizing communication and team cooperation on the field (Amoroso, Rebelo-gonçalves, et al., 2021). The interpretation of the SOTG varies with the level of competition, history of games between the same teams and the experience of the players.

The aims of this study were: (a) to profile the experience, training history, EBUC participation, SOTG and goal orientations of international UF players; and (b) to evaluate the contribution of this variables to the discrimination of players by SOTG level (i.e., high and regular) in the total sample and by competitive level (i.e., highest, intermediate, and lowest).

2. Methods

2.1. Participants

The present study comprised a total sample of 160 players: 33.8% were females (29.3±7.2 years of age) and 66.2% were males (37.6±9.7 years of age) participating in the EBUC 2019, held in Portimão, Portugal, from May 6th to Mat 11th. Characteristics of the athletes participating in the present study are summarized in Figure 1. Nineteen European countries were represented in eight divisions (women’s, men’s, mixed, master women’s, master men’s, master mixed, grand master men’s and great grand master men’s) across three different competitive levels (highest vs. intermediate vs. lowest). Competitive levels were determined by the World UF rankings from the WFDF: 33.1% were ranked top 10; 26.3% were ranked top 11 to 20; 26.3% were ranked 21 to 30 and (14.4%) were not ranked. Figure 1 also presents the number of games played by each player during the Championship.

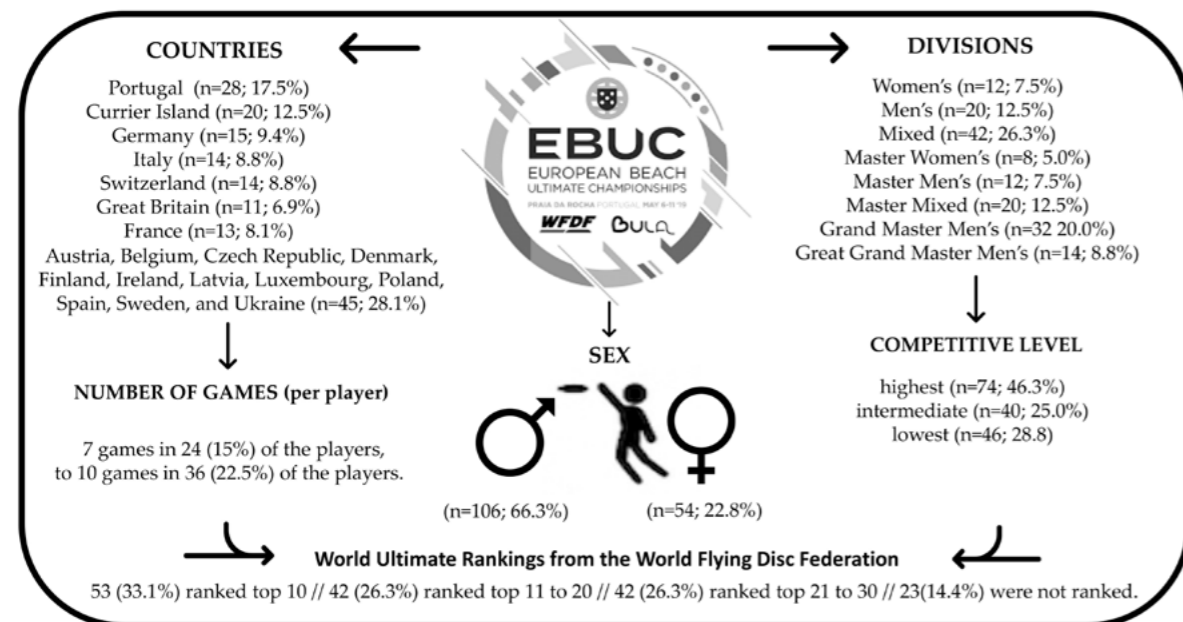


Figure 1 – Summary of participants characteristics

Cross-tabulations of UF players SOTG level by sex and competitive level are summarized in Table 1. Data indicated a similar percentage of male and female players ($\chi^2 = 3.20, p = 0.07$) and a similar percentage of highest, intermediate, and lowest competitive level players ($\chi^2 = 2.96, p = 0.23$) per SOTG level (two clusters, i.e., high vs. regular, developed based on principal component analysis and hierarchical classification), according with World UF Ranking from the WFDF.

	SOTG Level		χ^2	df	p
	High	Regular			
Sex:					
Female	30 (18.75%)	24 (15.0%)	3.196	1	0.074
Male	74 (46.25%)	32 (20.0%)			
Competitive Level:					
Highest	43 (26.88%)	31 (19.38%)	2.955	2	0.228
Intermediate	29 (18.13%)	11 (6.88%)			
Lowest	32 (20.0%)	14 (8.75%)			
Total	104 (65.0%)	56 (35.0%)			

UF (Ultimate Frisbee); SOTG (Spirit of the Game).

Table 1 – Cross-tabulations (absolute and relative frequencies) of UF players SOTG level by sex (upper) and Competitive level (lower).

2.2. Instrumentation

Spirit of the Game Scoring System

SOTG was measured based on a marking system used immediately after each game. Players assessed the SOTG of opposing team and their own team according to the five principles of the game. SOTG was measured by the sum of the scores obtained in five questions addressing the following domains: 1) Knowledge and use of the rules; 2) Fouls and body contact; 3) Fair-mindedness; 4) Positive attitude and self-control; 5) Communication. Answers were given in a 5-point Likert scale (0 = Poor; 1 = Not Good; 2 = Good; 3 = Very Good; 4 = Excellent). After each game, players rate if the other team was “better than”, “worse than”, or “the same as” a regular game, using the anchor “Good” as a baseline for comparison. The final SOTG score is the sum of the answers to all questions and may vary between 0 and 25, where a score of 10 is considered normal, Good Spirit.

Perception of Success Questionnaire

Participants were asked to respond to the POSQ (Roberts et al., 1998), which includes 12 items (e.g., “when playing ultimate, I feel most successful when...”) measured on 5-point Likert scale (ranging from A = strongly agree to E = Strongly disagree). The confirmatory factor analyses performed by Roberts et al. (1998) revealed that the POSQ is a reliable and valid instrument to measure achievement goal orientations in the context of sport and physical activity, both in adults and in children. Based on data obtained through sociodemographic questionnaire information and practice-related information were analysed, sex, age, UF experience, national team experience, weekly training sessions and volume, country world ranking, EBUC games played and classification and POSQ, in the total sample and by competitive level.

2.3. Procedures

A sociodemographic questionnaire was distributed by the “Spirit Director” to all “Spirit of the Game captains” in the protocol meeting, one day before the beginning of the tournament. Participants were asked to complete the questionnaires alone and in a quiet environment. Instructions on how to complete the questionnaire were provided, emphasizing that responses would be kept confidential, and that answers should be as honest and spontaneous as possible. It was stressed that there were no right or wrong answers. The questionnaires required approximately five minutes to be completed. Due to the specific rules of the UF, we chose to use the questionnaires in English as a standardized language for all participants. To standardize the procedures, we also used the English qualifications, *Common European Framework of reference for languages*. The study was conducted in accordance with recognized ethical standards for research in sports sciences (Harriss et al., 2019 and approved by Ethics Committee of the Faculty of Physical Education and Sport - Lusófona University on 6th February 2019 with the report number F0619 followed the Declaration of Helsinki produced by the World Medical Association for research with humans. Participants were fully informed about the nature of the study. Participation was voluntary and the right to withdraw from the study was explained. Before the completion of the questionnaires, participants provided their informed consent. Spirit Scoring is especially recommended for leagues and larger tournaments. In these events a team’s Spirit Captain is responsible for collecting Spirit Scores and giving them to the Spirit Director. Subsequently, this information was received and sent by the volunteers to the tournament’s game spirit director who collected all the game data and saved it in an excel sheet of the EBUC.

2.4. Principal component analysis and hierarchical classification

Principal component analysis was used to create a SOTG level profile, where rules knowledge, fouls and body contact, fair-mindedness, positive attitude, and communication were reduced into a single factor using Varimax rotation with Kaiser Normalization. Adequacy was checked using the Kaiser-Mayer-Olkin index and Bartlett’s sphericity test. Based on a screen plot, an Eigenvalue > 1 and interpretability, factors from the first principal component were designated as SOTG level profile. Higher scores corresponded to higher levels of SOTG. Based on the SOTG level profile, hierarchical classification techniques were employed for the classification and discrimination of the UF players into two clusters, i.e., high and regular SOTG level, using Euclidean distance with Ward’s algorithm.

2.5. Statistical analysis

Descriptive statistics were calculated. Factorial ANOVA was used to test the differ-

ences between: (a) female and male players; (b) highest vs. intermediate vs. lowest competitive levels, and (c) high vs. regular SOTG level in sport experience, EBUC participation and goal orientations in total sample. The effect size correlations (ES- r) were estimated using the square root of the ratio of the t-value squared and the difference between the t-value squared and degrees of freedom (Rosnow & Rosenthal, 1996). Coefficients were interpreted as follows: trivial ($r < 0.1$), small ($0.1 < r < 0.3$) moderate ($0.3 < r < 0.5$), large ($0.5 < r < 0.7$), very large ($0.7 < r < 0.9$), nearly perfect ($r > 0.9$) and perfect ($r = 1$).

Comparisons between high and regular SOTG level players by competitive level were performed using Student t-tests and standardized differences between means were reported using Cohen’s d values interpreted as follows: < 0.20 (trivial), 0.20 to 0.59 (small), 0.60 to 1.19 (moderate), 1.20 to 1.99 (large), 2.0 to 3.9 (very large), and > 4.0 (extremely large) (Hopkins et al., 2009). Pearson’s product moment correlation coefficients were calculated to examine the magnitude and direction of relationships among high SOTG level with age, sport and training experience, national team world ranking, EBUC games played and classification and motivational climate for the total sample and by competitive level. The magnitude of correlations was interpreted as follows (Hopkins et al., 2009): trivial ($r < 0.1$), small ($0.1 < r < 0.3$) moderate ($0.3 < r < 0.5$), large ($0.5 < r < 0.7$), very large ($0.7 < r < 0.9$), and nearly perfect ($r > 0.9$). Using those variables that were significantly influenced by SOTG level, discriminant function analysis was used to obtain a predictive model that permitted classification of UF players as high and regular, i.e., the original groupings, for the total sample and by competitive level. It was possible to order the predictors by the magnitude of correlations with the linear function. Subsequently, a stepwise model was used to test the hypothesis of extracting an alternative predictive model based on a smaller set of variables without losing explained variance. Significance was set at 5%. Statistical analyses were done with SPSS version 27.0 (SPSS Inc., IBM Company, N.Y., USA).

3. Results

Descriptive statistics by sex, competitive level and SOTG level are summarized in Table 2. Sex was not a consistent source of variation among players (Table 3). Players differed significantly by competitive level in Chronological age (Ca), sport experience, training history, EBUC resulting variables and task orientation. The effect of SOTG level was noted for CA, national team world ranking, EBUC games played and classification. The interaction of SOTG level and competitive level was a consistent source of variation among UF players, for all

variables. Players of the highest competitive level divisions were, on average, younger ($F = 256.86, p < 0.001, ES-r = 0.89$) and less experienced ($F = 20.02, p < 0.001, ES-r = 0.48$) than intermediate and lowest level players but reported a higher number of weekly training sessions ($F = 20.10, p < 0.001, ES-r = 0.48$) and volume ($F = 19.49, p < 0.001, ES-r = 0.47$). Highest competitive level players also played more games during de EBUC ($F = 28.21, p < 0.001, ES-r = 0.54$) and obtained a lower SOTG classification ($F = 5.97, p = 0.003, ES-r = 0.29$) and SOTG score ($F = 3.45, p = 0.04, ES-r = 0.22$) than lowest competitive level players. Finally, highest competitive players had a higher task orientation than lowest competitive level players ($F = 6.78, p = 0.002, ES-r = 0.30$). High SOTG level players were significantly older ($F = 5.27, p = 0.02, ES-r = 0.19$), belong to a national team with moderately lower world ranking ($F = 17.37, p < 0.001, ES-r = 0.34$), played fewer games during de EBUC ($F = 10.48, p = 0.002, ES-r = 0.27$) and obtained a lower EBUC classification ($F = 41.76, p < 0.001, ES-r = 0.49$) than regular SOTG level players. Although high SOTG level players obtained a significantly higher SOTG classification ($F = 118.63, p < 0.001, ES-r = 0.68$) – derived from a higher total SOTG score ($F = 258.02, p < 0.001, ES-r = 0.81$; less fouls and body contact; more fair; greater positive attitude; and better communication) – high and regular SOTG level players did not differ in rules knowledge.

	Sex		Competitive Level			SOTG level	
	Female (n=54)	Male (n=106)	Highest (n=74)	Intermediate (n=40)	Lowest (n=46)	High (n=104)	Regular (n=56)
Chronological age, years	29.3±7.2	37.6±9.7	26.2±3.8	37.5±4.4	45.9±5.3	36.5±9.7	32.7±9.4
UF experience, years	7.3±3.0	8.5±2.9	6.6±2.8	9.8±2.0	9.2±2.8	8.0±3.1	8.3±2.9
National team experience, years	3.3±3.1	4.0±3.6	2.6±2.2	4.5±3.7	4.8±4.2	3.3±3.1	4.5±3.8
Weekly training sessions, #	2.1±0.8	2.0±0.8	2.4±0.8	1.7±0.6	1.6±0.6	1.9±0.7	2.1±0.8
Weekly training volume, min	204±87	187±85	237±82	160±70	152±70	186±80	202±94
Country world ranking, #	14.1±9.0	15.2±9.2	14.9±9.2	14.2±8.8	15.2±9.5	17.3±9.3	11.1±7.5
EBUC games played, #	8.7±1.0	8.5±1.0	9.1±0.9	8.6±0.8	7.8±0.7	8.4±0.9	8.9±1.0
EBUC classification, #	6.5±4.2	6.8±3.4	7.5±3.8	6.6±3.8	5.6±3.2	8.2±3.3	4.6±3.1
SOTG classification, #	6.7±5.2	5.8±4.2	7.4±5.5	5.7±4.0	4.4±2.4	3.5±1.8	9.8±4.7
Rules knowledge, †	2.02±0.09	1.99±0.12	2.02±0.09	2.04±0.14	1.94±0.11	2.01±0.12	1.99±0.11
Fouls and body contact, †	1.95±0.16	2.03±0.21	1.97±0.16	2.04±0.31	2.04±0.13	2.11±0.16	1.87±0.17
Fair-mindedness, †	2.25±0.19	2.33±0.22	2.24±0.22	2.33±0.22	2.37±0.19	2.41±0.16	2.15±0.20
Positive attitude, †	2.58±0.22	2.54±0.20	2.48±0.22	2.65±0.18	2.57±0.16	2.66±0.14	2.39±0.17
Communication, †	2.19±0.14	2.23±0.19	2.27±0.20	2.23±0.19	2.13±0.18	2.27±0.18	2.13±0.14
Total SOTG Score, ‡	10.98±0.53	11.11±0.57	10.97±0.60	11.28±0.63	11.06±0.40	11.45±0.32	10.53±0.35
Task orientation, §	4.46±0.47	4.28±0.67	4.52±0.38	4.30±0.64	4.08±0.79	4.31±0.64	4.36±0.60
Ego orientation, §	3.05±0.74	3.09±0.88	3.17±0.85	3.22±0.67	2.83±0.87	3.01±0.79	3.16±0.88

SOTG (Spirit of the Game); UF (Ultimate Frisbee); EBUC (European Beach Ultimate Championship); † scale 0-4; ‡ sum of the results of the five categories; § scale 1-5.

Table 2 – Means and standard deviations for all variables as a function of sex, competitive level and SOTG level.

	Effect of Sex			Effect of Competitive Level			Effect of SOTG Level			Interaction SOTG Level x Sex			Interaction SOTG Level x Competitive Level		
	F	p	ES-r	F	p	ES-r	F	p	ES-r	F	p	ES-r	F	p	ES-r
Chronological age	25.42	<0.001	0.40	256.86	<0.001a	0.89	5.27	0.02	0.19	9.34	<0.001	0.42	102.07	<0.001	0.14
UF experience	5.63	0.02	0.20	20.02	<0.001b	0.48	0.35	0.56	0.05	2.44	0.07	0.23	9.75	<0.001	0.05
National team experience	1.08	0.30	0.09	6.92	0.001b	0.31	3.99	0.05	0.17	2.68	0.05	0.24	5.39	<0.001	0.14
Weekly training sessions	1.03	0.31	0.09	20.10	<0.001c	0.48	2.05	0.16	0.12	2.11	0.10	0.21	9.05	<0.001	0.19
Weekly training volume	1.25	0.27	0.10	19.49	<0.001c	0.47	1.11	0.29	0.09	2.05	0.11	0.21	9.03	<0.001	0.17
Country world ranking	0.44	0.51	0.06	0.11	0.89	0.04	17.37	<0.001	0.34	7.13	<0.001	0.37	4.27	0.001	0.21
EBUC games played	1.02	0.31	0.09	28.21	<0.001d	0.54	10.48	0.002	0.27	3.80	0.01	0.28	13.53	<0.001	0.23
EBUC classification	0.18	0.67	0.04	3.66	0.03e	0.23	41.76	<0.001	0.49	14.04	<0.001	0.49	13.28	<0.001	0.48
SOTG classification	1.11	0.29	0.09	5.97	0.003e	0.29	118.63	<0.001	0.68	39.45	<0.001	0.69	28.53	<0.001	0.66
Rules knowledge	1.63	0.20	0.11	8.51	<0.001f	0.34	1.29	0.26	0.10	1.40	0.25	0.17	6.02	<0.001	0.16
Fouls and body contact	4.96	0.03	0.19	2.15	0.12	0.18	74.91	<0.001	0.60	25.98	<0.001	0.61	23.15	<0.001	0.69
Fair-mindedness	3.62	0.06	0.16	5.45	0.005e	0.27	67.02	<0.001	0.58	22.88	<0.001	0.58	22.30	<0.001	0.80
Positive attitude	1.06	0.31	0.09	9.01	<0.001b	0.34	103.36	<0.001	0.66	41.90	<0.001	0.70	26.21	<0.001	0.57
Communication	1.25	0.27	0.10	9.35	<0.001f	0.35	21.48	<0.001	0.37	7.15	<0.001	0.37	17.80	<0.001	0.68
Total SOTG Score	1.53	0.22	0.11	3.45	0.04e	0.22	258.02	<0.001	0.81	86.19	<0.001	0.81	71.46	<0.001	0.88
Task orientation	2.54	0.11	0.14	6.78	0.002f	0.30	0.22	0.64	0.04	0.90	0.44	0.14	2.95	0.02	0.16
Ego orientation	0.06	0.81	0.02	2.87	0.06	0.20	1.07	0.30	0.09	0.95	0.42	0.14	3.16	0.01	0.19

SOTG (Spirit of the Game); UF (Ultimate Frisbee); EBUC (European Beach Ultimate Championship).

a Highest < Intermediate < Lowest.

b Highest < Intermediate and Lowest.

c Highest > Intermediate and Lowest.

d Highest > Intermediate > Lowest.

e Highest < Lowest.

f Highest > Lowest.

Table 3 – Results of ANOVA to test the main effects of sex, competitive level, and SOTG level, and the interaction effects of SOTG Level x Sex and SOTG Level x Competitive level.

In each competitive level, those with high SOTG level obtained a lower EBUC classification ($t(df) = 5.73$ to 6.55 , $p < 0.001$, $d = 1.28$ to 2.06), higher SOTG classification ($t(df) = -13.21$ to -7.04 , $p < 0.001$, $d = 1.28$ to 2.85), better evaluations for fouls and body contact ($t(df) = 2.76$ to 9.23 , $p < 0.05$, $d = 0.86$ to 1.99) and positive attitude ($t(df) = 5.88$ to 7.43 , $p < 0.001$, $d = 2.06$ to 2.57), than regular SOTG level players (Table 4). High SOTG level players also had less UF and national team experience (lowest competitive level: $t(df) = -3.32$, -2.47 , $p < 0.05$, $d = 0.76$, 0.78 ; respectively), higher weekly training volume (lowest competitive level: $t(df) = 2.05$, $p < 0.05$, $d = 0.64$), belonged to teams with lower world ranking (intermediate competitive level: $t(df) = 2.66$, $p = 0.01$, $d = 0.82$; lowest competitive level: $t(df) = 4.44$, $p < 0.001$, $d = 1.19$), played less games in the EBUC (highest competitive level: $t(df) = -2.19$, $p < 0.05$, $d = 0.53$; lowest competitive level: $t(df) = -3.21$, $p < 0.01$, $d = 0.82$) and obtained higher scores in the fair-mindedness (highest competitive level: $t(df) = 9.77$, $p < 0.001$, $d = 2.17$; intermediate competitive level: $t(df) = 5.39$, $p < 0.001$, $d = 1.86$) and communication (highest competitive level: $t(df) = 5.76$, $p < 0.001$, $d = 1.34$; lowest competitive level: $t(df) = 4.77$, $p < 0.001$, $d = 1.50$). Players of contrasting SOTG level at each competitive level did not differ in rules knowledge and task orientation. Ego orientation was significantly lower in high SOTG level players of the lowest competitive level ($t(df) = -2.16$, $p = 0.03$, $d = 0.68$).

Competitive Level	Highest (n=74)		t			Intermediate (n=40)			t			Lowest (n=46)			t		
	High (n=74)	Regular (n=31)	t	p	d	High (n=40)	Regular (n=11)	t	p	d	High (n=32)	Regular (n=42)	t	p	d		
Chronological age, years	26.3±3.5	25.6±3.7	0.75	0.45	0.18	37.7±4.5	37.1±3.5	0.40	0.69	0.14	46.8±5.3	45.1±5.4	1.04	0.31	0.32		
UF experience, years	6.3±3.0	6.7±2.8	-0.71	0.48	0.16	9.8±2.0	9.7±1.8	0.05	0.96	0.02	8.7±3.1	10.7±1.1	-3.32	0.002	0.76		
National team experience, years	2.0±1.6	2.9±2.6	-1.74	0.08	0.43	3.7±3.1	5.4±4.3	-1.37	0.18	0.47	4.0±3.9	7.1±4.0	-2.47	0.02	0.78		
Weekly training sessions, #	2.2±0.7	2.6±0.8	-1.81	0.07	0.43	1.7±0.6	1.7±0.5	-0.35	0.73	0.12	1.7±0.6	1.4±0.6	1.51	0.14	0.47		
Weekly training volume, min	221±76	251±82	-1.63	0.11	0.38	157±71	165±60	-0.33	0.74	0.11	165±64	122±72	2.04	0.04	0.64		
Country world ranking, #	16.9±9.6	13.0±8.4	1.71	0.09	0.42	16.6±9.3	9.5±5.7	2.66	0.01	0.82	18.5±9.2	8.4±5.6	4.44	<0.001	1.19		
EBUC games played, #	8.8±0.8	9.3±1.0	-2.19	0.03	0.53	8.8±0.8	8.6±1.2	0.58	0.56	0.20	7.7±0.7	8.2±0.4	-3.21	0.003	0.82		
EBUC classification, #	11.1±4.5	5.7±3.4	5.73	<0.001	1.28	8.4±3.7	4.0±1.0	5.84	<0.001	1.34	7.2±2.4	2.4±2.0	6.55	<0.001	2.06		
SOTG classification, #	3.6±2.1	11.0±5.5	-7.04	<0.001	1.85	3.0±1.9	9.6±4.1	-5.25	<0.001	2.44	2.9±1.7	7.1±0.4	-13.21	<0.001	2.85		
Rules knowledge, †	2.00±0.08	2.03±0.08	-1.52	0.13	0.35	2.04±0.13	1.97±0.12	1.56	0.13	0.54	1.96±0.10	1.89±0.11	1.89	0.06	0.59		
Fouls and body contact, †	2.11±0.15	1.86±0.08	9.23	<0.001	1.97	2.16±0.19	1.73±0.25	5.79	<0.001	1.99	2.09±0.11	1.98±0.16	2.76	0.008	0.86		
Fair-mindedness, †	2.36±0.15	2.07±0.11	9.77	<0.001	2.17	2.49±0.19	2.14±0.16	5.39	<0.001	1.86	2.41±0.18	2.35±0.25	0.97	0.34	0.30		
Positive attitude, †	2.74±0.33	2.35±0.21	5.88	<0.001	1.37	2.81±0.13	2.46±0.13	7.43	<0.001	2.57	2.69±0.15	2.40±0.10	6.56	<0.001	2.06		
Communication, †	2.36±0.19	2.13±0.13	5.76	<0.001	1.34	2.26±0.17	2.22±0.20	0.55	0.58	0.19	2.16±0.06	2.07±0.06	4.77	<0.001	1.50		
Total SOTG Score, ‡	11.58±0.42	10.45±0.32	12.49	<0.001	2.90	11.76±0.30	10.53±0.29	11.64	<0.001	4.02	11.31±0.37	10.70±0.39	5.06	<0.001	1.59		
Task orientation, §	4.52±0.47	4.46±0.42	0.55	0.58	0.13	4.25±0.48	4.42±0.83	-0.81	0.42	0.28	4.04±0.91	4.11±0.68	-0.24	0.81	0.08		
Ego orientation, §	3.21±0.89	3.01±0.89	0.95	0.35	0.22	3.11±0.70	3.52±0.52	-1.72	0.09	0.60	2.66±0.69	3.23±1.05	-2.16	0.03	0.68		

SOTG (Spirit of the Game); UF (Ultimate Frisbee); EBUC (European Beach Ultimate Championship); † scale 0-4; ‡ sum of the results of the five categories; § scale 1-5.

Table 4 – Means and standard deviations for all variables by SOTG level within competitive level.

Table 5 summarizes the interrelationship between high SOTG level with age, UF experience, national team experience, weekly training sessions and volume, country world ranking, EBUC games played and classification in the total sample and by competitive level. Correlations were ordered as follows: all players – EBUC classification [+0.53 (0.40; 0.64), $p < 0.01$], country world ranking [+0.31 (0.14; 0.46), $p < 0.01$], EBUC games played [-0.19 (-0.34; -0.04),

$p < 0.05$], national team experience [-0.18 (-0.33; -0.02), $p < 0.05$], CA [+0.15 (-0.01; 0.30), $p > 0.05$], weekly training sessions [-0.12 (-0.27; 0.04), $p > 0.05$], ego orientation [-0.11 (-0.26; 0.05), $p > 0.05$], task orientation [-0.05 (-0.21; 0.11), $p > 0.05$]; highest competitive level – EBUC classification [+0.58 (0.39; 0.71), $p < 0.01$], EBUC games played [-0.30 (-0.50; -0.07), $p < 0.05$], weekly training sessions [+0.23 (-0.45; 0.001), $p < 0.05$], country world ranking [+0.20 (-0.06; 0.43), $p > 0.05$], national team experience [-0.19 (-0.40; 0.05), $p > 0.05$]; intermediate competitive level – EBUC classification [+0.48 (0.19; 0.70), $p < 0.01$], country world ranking [+0.40 (0.05; 0.67), $p < 0.05$], ego orientation [-0.29 (-0.56; 0.04), $p > 0.05$], task orientation [-0.27 (-0.54; 0.05), $p > 0.05$]; national team experience [-0.18 (-0.47; 0.15), $p > 0.05$]; lowest competitive level – EBUC classification [+0.65 (0.43; 0.79), $p < 0.01$], country world ranking [+0.54 (0.27; 0.73), $p < 0.01$], EBUC games played [-0.39 (-0.62; -0.11), $p < 0.01$], UF experience [-0.36 (-0.60; -0.07), $p < 0.05$], national team experience [-0.35 (-0.59; -0.05), $p < 0.05$], weekly training volume [+0.33 (0.03; 0.57), $p < 0.05$], ego orientation [-0.32 (-0.57; -0.03), $p < 0.05$].

	High SOTG Level †			
	All Players (n=160) r (95%CI)	Highest (n=74) r (95%CI)	Intermediate (n=40) r (95%CI)	Lowest (n=46) r (95%CI)
Chronological age	0.15 (-0.01; 0.30)	0.06 (-0.18; 0.29)	0.04 (-0.28; 0.36)	0.16 (-0.14; 0.44)
UF experience	-0.06 (-0.21; 0.11)	-0.09 (-0.32; 0.15)	0.00 (-0.32; 0.32)	-0.36 * (-0.60; -0.07)
National team experience	-0.18 * (-0.33; -0.02)	-0.19 (-0.40; 0.05)	-0.18 (-0.47; 0.15)	-0.35 * (-0.59; -0.05)
Weekly training sessions	-0.12 (-0.27; 0.04)	0.23 * (-0.45; 0.001) ‡	-0.08 (-0.39; 0.25)	0.25 (-0.06; 0.51)
Weekly training volume	-0.10 (-0.26; 0.06)	0.23 * (-0.44; 0.01) ‡	-0.09 (-0.40; 0.24)	0.33 * (0.03; 0.57)
Country world ranking	0.31 ** (0.14; 0.46)	0.20 (-0.06; 0.43)	0.40 * (0.05; 0.67)	0.54 ** (0.27; 0.73)
EBUC games played	-0.19 * (-0.34; -0.04)	-0.30 ** (-0.50; -0.07)	0.05 (-0.28; 0.36)	-0.39 ** (-0.62; -0.11)
EBUC classification	0.53 ** (0.40; 0.64)	0.58 ** (0.39; 0.71)	0.48 ** (0.19; 0.70)	0.65 ** (0.43; 0.79)
Task orientation	-0.05 (-0.21; 0.11)	0.09 (-0.15; 0.32)	-0.29 (-0.56; 0.04)	0.03 (-0.28; 0.32)
Ego orientation	-0.11 (-0.26; 0.05)	0.10 (-0.14; 0.33)	-0.27 (-0.54; 0.05)	-0.32 * (-0.57; -0.03)

Note: (dummy coded; regular SOTG level as the reference group)

SOTG (Spirit of the Game); UF (Ultimate Frisbee); EBUC (European Beach Ultimate Championship).

r (correlation coefficients); 95%CI (95% confidence intervals).

† Dummy coded (regular SOTG level as the reference group in the analysis).

‡ Unacceptable collinearity ($r > 0.98$).

* $p < 0.05$, ** $p < 0.01$

Table 5 – Relationship of high SOTG level with age, UF experience, national team experience, weekly training sessions and volume, country world ranking, EBUC games played and classification, and motivational climate measures, in the total sample and by competitive level.

	Step	Entered	Wilks' Lambda	df1	df2	df3	Exact F	df1	df2	Sig.
All players (n=160)	1	EBUC classification	0.748	1	1	158	53.354	1	158	<0.001
	2	EBUC games played	0.679	2	1	158	37.042	2	157	<0.001
	3	Weekly training sessions	0.653	3	1	158	27.576	3	156	<0.001
Competitive Level										
Highest (n=74)	1	EBUC classification	0.705	1	1	72	30.115	1	72	<0.001
	2	EBUC games played	0.606	2	1	72	23.059	2	71	<0.001
Intermediate (n=40)	1	EBUC classification	0.720	1	1	38	14.795	1	38	<0.001
Lowest (n=46)	1	EBUC classification	0.506	1	1	44	42.957	1	44	<0.001

SOTG (Spirit of the Game); UF (Ultimate Frisbee); EBUC (European Beach Ultimate Championship). Variables in the analysis: National team experience; Weekly training sessions; Weekly training volume; Country world ranking; EBUC games played; EBUC classification; Task orientation; Ego orientation.

Table 6 – Summary of stepwise discriminant analyses of UF players by SOTG level (High and Regular) in the total sample and by competitive level.

4. Discussion

The purpose of this study was two-fold: first, to examine the experience, training history, European Beach Ultimate Championship (EBUC) participation and goal orientations of international UF players; second, to evaluate the contribution of these variables in a discriminant function to classify players according to SOTG level and competitive level. The effect of SOTG level was particularly observed for CA, national team world ranking, EBUC games played and classification.

The interpretation of the SOTG varies with the level of competition, history of games between the same teams and the experience of the players. According with Amoroso et al. (Amoroso et al. 2021), players of the highest competitive level divisions were, on average, younger and less experienced than intermediate and lowest level players but reported a higher number of weekly training sessions and volume.

The highest competitive level players played more games during de EBUC and obtained a lower SOTG classification and SOTG score than the lowest competitive level players. Players with the highest SOTG scores were also the ones who reported fewer fouls and body contact, were fairer, had more positive attitudes, and better communication. UF and SOTG promote those behaviours and guide the development of an approach to participation that enables youngsters in daily training to define sports competitions with focus and good direction. (Amoroso, Coakley, et al., 2021b). High and regular SOTG level players did not differ in knowledge

of the rules. Taken together, these results suggest that players actively avoid actions such as intentional fouling, cheating, dangerous plays, disrespectful conversations, and other ‘win at all costs’ behaviour.

In each competitive level, those with high SOTG level obtained a lower EBUC classification, higher SOTG classification, better scores for fouls and body contact, and positive attitude than regular SOTG level players. Ego-orientation was significantly lower in high SOTG players than in regular SOTG players, in the lowest competitive level. Considering that the pursuit of ego goals may promote cheating in sport, these results provide strong empirical support for ego-orientation being inversely associated with the spirit of the game, in line with the literature of moral reasoning and moral behavior in sport (Schwamberger & Curtner-Smith, 2017).

The stepwise protocol used in the discriminant analysis indicated a linear combination of three variables that differed between high and regular SOTG level players. The final model included EBUC classification, EBUC games played and weekly training sessions suggesting that whoever has more contact with the sport has a “better spirit”. High SOTG level players obtained a significantly higher SOTG classification derived from a higher score on four of the five dimensions (i.e., high SOTG athletes committed fewer fouls, less body contact, were fairer, and demonstrated greater positive attitude and better communication).

In this study, athletes of different competition levels demonstrate similar SOTG results. Intimidation, intentional fouling, or other “win-at-all-costs” behavior are contrary to the spirit of the game and must be avoided by all players. (Robbins, 2012). The analysis by competitive level also successfully distinguished high and regular SOTG level players. The EBUC classification was identified as a common predictor for each competitive level.

Our findings indicate that sex was not a consistent source of variation among players which could suggest gender equity among UF players regarding their sport experience, training history, EBUC resulting variables, and goal orientation. Policies seeking to promote gender equity in sport need to enforce changes in club environments in addition to focusing on increasing women’s participation (Jeanes et al., 2021). All over Europe integrating a gender perspective to enhance sport participation is one of the most prominent targets of sport policy today since research shows that men participate more often in sports than women (Kamberidou, 2012).

Players differed significantly by competitive level in CA, sport experience, training history, EBUC resulting variables and task orientation, training, and competition contexts. These could be considered when researchers investigate achievement motivation in sport, and application of the rules, safe play, fair-mindedness, calm communication, and positive and respectful attitude to protect the basic joy of play. This transformation is delicate and not automatic. And certainly not guaranteed for all instances of gameplay. We should seek a changeable

attitude towards ends, and we should seek well-designed games that enable the transformation of competition into cooperation (Nguyen, 2017).

The interaction of SOTG level and competitive level was a consistent source of variation among UF players, with improvements being obtained in all of them (García-López & Gutiérrez, 2015). Siedentop (Siedentop, n.d.) proposed the development of a competent, literate, and enthusiastic sportsperson as the main goals of sport education. Literacy encompasses the ethical dimension of the model. Therefore, it is the goal most closely related to the research variables of the present study: SOTG and competition levels (Figure 2).

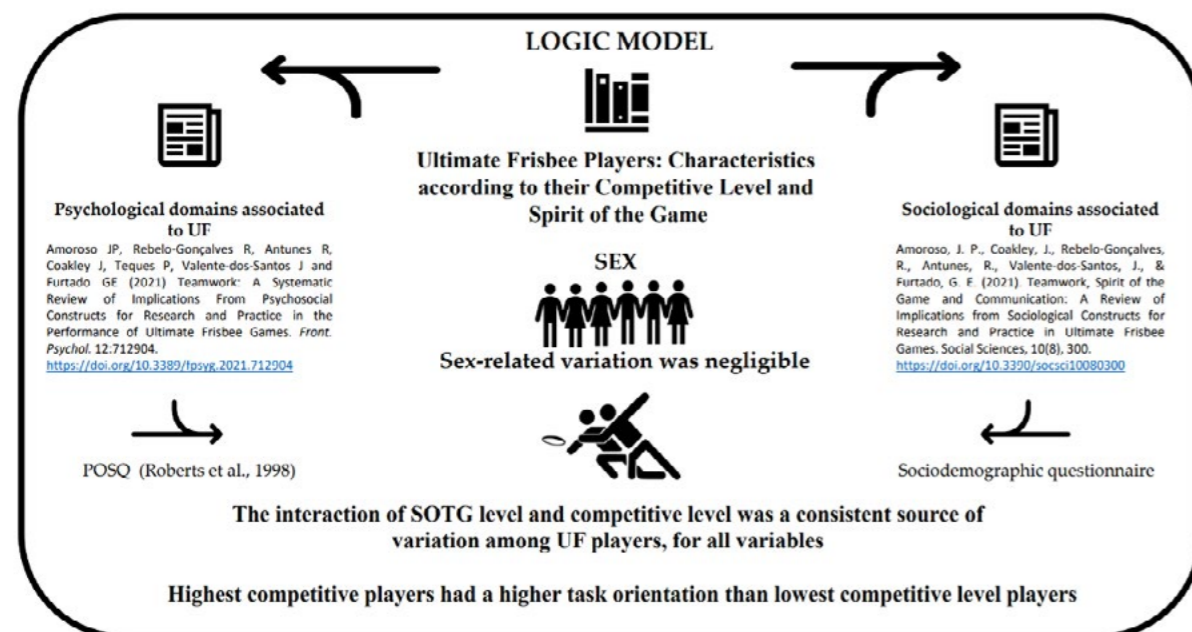


Figure 2 – Summary of logic model

Although high SOTG level players obtained a significantly higher SOTG classification notwithstanding controversial elements suggest that being male, or female does not interfere with ego or task orientation in SOTG variables (Van Acker et al., 2010). The observance of fair play, then, seems to be most often equated with how we observe the rules of the game, with its emphasis on individual rights and responsibilities, that guides the underlying assumptions philosophers make about the possibility of teaching appropriate moral behaviour (Singleton, 2003). High and regular SOTG level players did not differ in rules knowledge, individuals with high learning orientation tend to engage in more effortful cognitive processes when learning a new task or knowledge domain. In UF, self-refereeing creates a form of ideological social control whereby rule violations and disputes are dealt with through a well-established ‘ritual’ of resolution between any two given players in a way that maximizes game flow (Griggs, 2011).

5. Conclusions

In summary, to examine the experience, training history, and goal orientations of international UF of players participating in the European Beach Ultimate Championship (EBUC), our results noted that sex was not a consistent source of SOTG score variation among players. On the other hand, the interaction of SOTG level and competitive level was a consistent source of variation among UF players, for all variables. Players differed significantly by competitive level in CA, sport experience, training history, EBUC resulting variables and task orientation, ludic and competition contexts should be considered when researchers investigate achievement motivation in sport. An effect of SOTG level was noted for CA, national team world ranking, EBUC games played and classification. The interaction of SOTG level and competitive level was a consistent source of variation among UF players, for all variables.

On average, players of the highest competitive level were younger and less experienced than intermediate and lowest competitive levels. However, they reported a higher number of weekly training sessions and volume. Moreover, the highest competitive level players played more games during de EBUC and obtained a lower SOTG classification and SOTG score than the lowest competitive level players. Therefore, players who have more contact with UF have better SOTG values.

Practical Implications

The findings provide important information to coaches, PE teachers and sport consultants, and may be of use in formulating SOTG preparation programs that could foster the experience of sportsmanship and facilitate athletes ethical conduct in either ludic context or in competition. Using SOTG requires that every player knows the rules. Players are responsible for their behavior and for self-refereeing, which is arguably a useful tool for children and adolescents to develop a sense of community through their sport experience. This perspective may be useful to develop interventions that prepare players to be more conscientious of their one actions and help teams to improve the spirit of the game.

Acknowledgments: We would like to thank the to the WFDF - World flying disc federation for all the support, and by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020. Many thanks to our research team for all effort and contributions.

Conflicts of Interest: No potential conflict of interest was reported by all authors.

Funding

This work was supported by the Portuguese Foundation for Science and Technology, I.P., Grant/Award Number UIDB/04748/2020.

Author Contributions

Conceptualization, J.P.A., J.V.S., G.E.F., and R.A.; methodology, J.P.A., and J.V.S., data curation, J.P.A., G.E.F., R.A., writing, J.P.A., J.V.S., G.E.F., R.A., R.R.G. and L.C., All authors have read and agreed to the published version of the manuscript.

6. References

- Amoroso, J. P., Coakley, J., Rebelo-Gonçalves, R., Antunes, R., Valente-dos-Santos, J., & Furtado, G. E. (2021a). Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games. *Social Sciences*, *10*(8), 300. <https://doi.org/10.3390/socsci10080300>
- Amoroso, J. P., Rebelo-gonçalves, R., Antunes, R., & Coakley, J. (2021b). *Teamwork : A Systematic Review of Implications From Psychosocial Constructs for Research and Practice in the Performance of Ultimate Frisbee Games*. *12*(August), 1–10. <https://doi.org/10.3389/fpsyg.2021.712904>
- Biddle, S. J. H., John Wang, C. K., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science*, *3*(5), 1–20. <https://doi.org/10.1080/17461390300073504>
- Clark, E., Hamilton, R., & Bowden, R. (1981). Ultimate Frisbee. *Journal of Physical Education and Recreation*, *52*(9), 56–58. <https://doi.org/10.1080/07303084.1981.10631065>
- Crocket, H. (2015). Foucault, flying discs and calling fouls: Ascetic practices of the self in ultimate frisbee. *Sociology of Sport Journal*, *32*(1), 89–105. <https://doi.org/10.1123/ssj.2013-0039>
- Fransen, K., Vanbeselaere, N., Exadaktylos, V., Broek, G. Vande, de Cuyper, B., Berckmans, D., Ceux, T., de Backer, M., & Boen, F. (2012). “Yes, we can!”: Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences*, *30*(7), 641–649. <https://doi.org/10.1080/02640414.2011.653579>
- García-López, L. M., & Gutiérrez, D. (2015). The effects of a sport education season on empathy and assertiveness. *Physical Education and Sport Pedagogy*, *20*(1), 1–16. <https://doi.org/10.1080/17408989.2013.780592>
- Griggs, G. (2009). ‘When a ball dreams, it dreams it’s a Frisbee’: the emergence of aesthetic appreciation within Ultimate Frisbee. *Sport in Society*, *12*(10), 1317–1326. <https://doi.org/10.1080/17430430903204827>
- Griggs, G. (2011). “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee. *Sport in Society*, *14*(1), 97–110. <https://doi.org/10.1080/17430437.2011.530013>
- Harriss, D. J., Macsween, A., & Atkinson, G. (2019). Ethical Standards in Sport and Exercise Science Research: 2020 Update. *International Journal of Sports Medicine*, *40*(13), 813–817. <https://doi.org/10.1055/a-1015-3123>
- Hopkins, W. G., Marshall, S. W., Batterham, A. M., & Hanin, J. (2009). Progressive statistics for studies in sports medicine and exercise science. *Medicine and Science in Sports and Exercise*, *41*(1), 3–12. <https://doi.org/10.1249/MSS.0b013e31818cb278>
- Jeanes, R., Spaaij, R., Farquharson, K., McGrath, G., Magee, J., Lusher, D., & Gorman, S. (2021). Gender Relations, Gender Equity, and Community Sports Spaces. *Journal of Sport and Social Issues*, *45*(6), 545–567. <https://doi.org/10.1177/0193723520962955>
- Kamberidou, I. (2012). New realms of agency: Promoting peace education and gender equity through sport. *Technology (ECWT)*, 1–32.
- Keegan, R., Harwood, C., Spray, C., & Lavalley, D. (2011). From “motivational climate” to “motivational atmosphere”: A review of research examining the social and environmental influences on athlete motivation in sport. *Sport Psychology*, *March*, 1–69.
- Nguyen, C. T. (2017). Competition as cooperation. *Journal of the Philosophy of Sport*, *44*(1), 123–137. <https://doi.org/10.1080/00948705.2016.1261643>
- Pattison, L. (2011). ‘The Dynamics of the Disc.’ Ultimate (Frisbee), Community, & Memory, 1968-2011. August, 1968–2011.
- Robbins, B. G. (2012). Playing with fire, competing with spirit: Cooperation in the sport of ultimate. *Sociological Spectrum*, *32*(3), 270–290. <https://doi.org/10.1080/02732173.2012.663713>
- Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the perception of success questionnaire. *Journal of Sports Sciences*, *16*(4), 337–347. <https://doi.org/10.1080/02640419808559362>
- Rosnow, R. L., & Rosenthal, R. (1996). Computing contrasts, effect sizes, and counternulls on other people’s published data: General procedures for research consumers. *Psycho-*

- logical Methods*, 1(4), 331–340. <https://doi.org/10.1037/1082-989X.1.4.331>
- Sage, L. D., & Kavussanu, M. (2008). Goal orientations, motivational climate, and prosocial and antisocial behaviour in youth football: Exploring their temporal stability and reciprocal relationships. *Journal of Sports Sciences*, 26(7), 717–732. <https://doi.org/10.1080/02640410701769716>
- Schwamberger, B., & Curtner-Smith, M. (2017). Influence of a training programme on a pre-service teacher's ability to promote moral and sporting behaviour in sport education. *European Physical Education Review*. <https://doi.org/10.1177/1356336X16653586>
- Siedentop, D. (n.d.). *Sport education: Quality PE through positive sport experiences* (H. Kinetics (ed.)).
- Singleton, E. (2003). Rules? relationships?: A feminist analysis of competition and fair play in physical education. *Quest*, 55(2), 193–209. <https://doi.org/10.1080/00336297.2003.10491799>
- Spencer-Cavaliere, N., Kingsley, B. C., & Gotwals, J. K. (2017). Ethic of care and the competitive Ultimate Frisbee playing experiences of young women. *Leisure Studies*. <https://doi.org/10.1080/02614367.2015.1105859>
- van Acker, R., da Costa, F. C., de Bourdeaudhuij, I., Cardon, G., & Haerens, L. (2010). Sex equity and physical activity levels in coeducational physical education: Exploring the potential of modified game forms. *Physical Education and Sport Pedagogy*, 15(2), 159–173. <https://doi.org/10.1080/17408980902877609>

PART 3

General Discussion and Conclusions

General Discussion

An extensive discussion of each of the four studies' main findings was included in the respective chapters. The rationale of this section is to gather and integrate the contributions of the four studies, by summarizing the main results and reflecting on their implications for future research and practical applications. From the outset one of our goals was understand and explore the ethical and fair-play concepts of elite Ultimate Frisbee (UF) practitioners and identify the importance of Spirit of the Game (SOTG) for elite UF practitioners. Hence the research questions: What is the goal orientation of elite UF players? Do EBUC participants conform with the SOTG?

1.1. Aim of the thesis

Scientific research on UF is limited and results have not often been validated in subsequent studies. We are currently encountering and dealing with a new and challenging sport that has been promoted with a unique emphasis on inclusive participation, an appreciation of the sport's unique normative foundations, a commitment to gender equality, and self-refereeing.

Research indicates that girls have lower participation rates in formal sport than boys. Typically, girls identify the social aspects of participation, such as making friends and positive interactions with others, as the most important factors in their sporting experiences (Keathley, Himelein and Srigley, 2013; Spencer-Cavaliere, Kingsley and Gotwals, 2017). In this sense, UF appears to conform to this pattern.

The most unique feature of UF is that players are responsible for complying with game rules, accepting a logic of equity, and being personally responsible for maintaining the structural integrity and principles of the game. Apparently, the SOTG has not allowed UF to overcome or compensate for all the criticisms associated with the traditional competitive context of organized sports. This means that it is important for research done in sports studies and physical education (PE) to focus on whether Ultimate Frisbee, and more specifically the SOTG, can be a useful educational tool through which young people can develop positive and appropriate attitudes towards sports (Thedin Jakobsson, 2014).

Following a line of studies dedicated to the style of participation in UF Kerins, Scott and Shafer (2007) identified a combination of attitudes, behaviors and interests that characterize involvement with the sport by different levels of commitment. Indeed, three generic styles of participation were proposed along the continuum of specialization, i.e., Casual, Active and

Serious, using a self-rating tool (Scott et al., 2005). The use of this tool was effective in identifying and segmenting participants with recreational interests in the modality. Discovering the main reasons for participation in UF has been a common focus of research, especially in the case of female practitioners. According to Spencer-Cavaliere, Kingsley, and Gotwals (2017), the main reasons why young women participate in sport (i.e., social interaction and friendship) are not fully consistent with the emphasis on game results that is common in traditional competitive sports. Their study also noted that elite female athletes, who represented Canada at the Junior World Cup, highlighted the contextual nature of SOTG, in connection with the players' sense of responsibility in upholding this ethos and the challenges of self-regulation and relationships with others in the sports community as more meaningful elements of participation. However, despite UF being appealing and viewed as an alternative to traditional competitive sports, Spencer-Cavaliere, Kingsley, and Gotwals (2017) demonstrated that the SOTG did not eliminate all widely criticized attitudes and perspectives associated with the traditional competitive context. Therefore, the overall purpose of this thesis is to gain more insight into the relationship between UF and SOTG with sex, chronological age, competitive level, divisions, training sessions, ranking divisions, and goal orientation.

1.2. Results highlights

In **Chapter 1** the study provided a systematic review of the psychological domains associated with UF. We identified lines of investigation, but none takes a specific approach to self-refereeing and the use of the SOTG game sheet. We found that group goals and promoting teamwork significantly predicted social cohesion and that teamwork and task cohesion was mediated by communication. In summary, the study provides real-time knowledge about the game and its rules as they exist in one of the few team sports that is self-refereed. There seems to be a differentiation in the players' awareness of the game using the SOTG sheet as the main differentiating factor.

In **Chapter 2** the review indicates that cooperation/friendship is a theme that is a systemic and institutionalized aspect of SOTG. They are the foundation for an ethos comprised of an overarching system of norms that permeates all divisions and levels of competition. As a result, UF takes on the characteristics of a moral community organized around the spirit of the game (Robbins, 2012). The systemic approach to rules combined with self-refereeing encourages young people to strive for personal excellence and competitive success at the same time that they value fairness and respect for both the rules and their opponents (Lee, Whitehead and Ntoumanis, 2008). This makes it possible to facilitate the formation of a unique culture sustained by the student players. The nine studies that we have reviewed in this project provide

strong support for creating positive social dynamics among players. According to Baccarini and Booth (2008), UF emphasizes citizenship, being an appropriate game for the participation of younger and older people, regardless of the level of sports performance. Practitioners of this game are challenged to conceptualize, process, plan and perform complex movements during the course of the game. (Griggs, 2011) presents UF as a self-correcting sport, which in turn results in better compliance with the formal rules of the game. Players are responsible for complying with the regulations in a logic of fairness and duty to the structuring principle of the game – SOTG (Robbins, 2012).

We believe the findings of this study support social dynamics for UF participants. Alternatively, if we consider the socialization factors, that may lead to differing athletes, then we recognize that advantageous behaviors can be developed. Doing so is a much more meaningful and promising view of group dynamics in sport. We presented directions for future research that appear new and particularly interesting (figure 1).

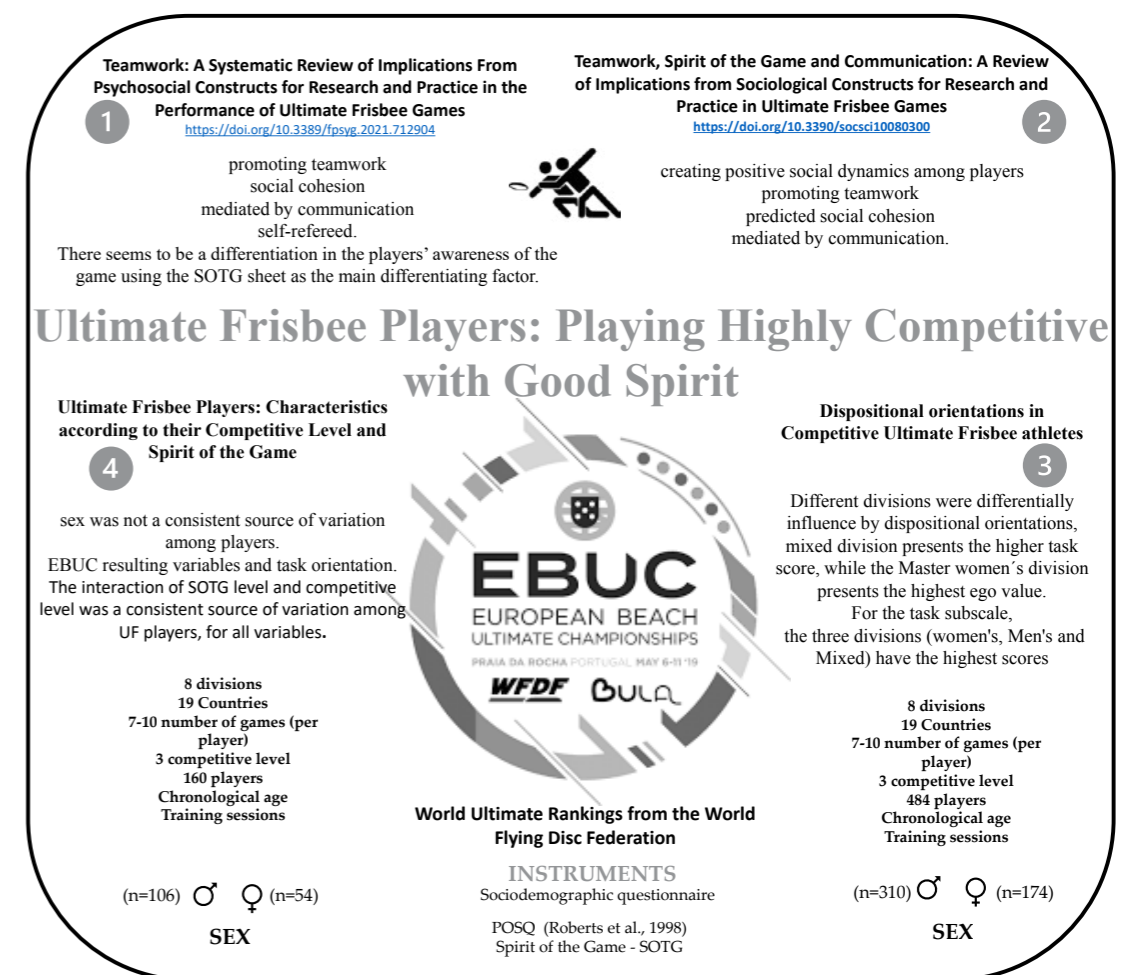


Figure1 – Ultimate Frisbee: Playing highly competitive with good spirit (Logical Model).

Chapter 3 provided evidence indicating that the high task orientations of UF athletes defines success in self-referenced terms, such as through mastering tasks or improving one's own personal skills. Different divisions were differentially influenced by dispositional orientations, mixed division presents the higher task score, while the Master women's division presents the highest ego value. For the task subscale, the three divisions (women's, Men's and Mixed) have the highest scores. There are a variety of environmental and social variables that can influence the observed differentiated dispositional orientation between athletes of different divisions.

Chapter 4 attempts to further unravel the importance of UF and SOTG by isolating variables. For example, this study found that sex was not a consistent source of variation among players. Players differed significantly by competitive level in CA, sport experience, training history, EBUC resulting variables and task orientation. The effect of SOTG level was noted for CA, national team world ranking, EBUC games played and classification. The interaction of SOTG level and competitive level was a consistent source of variation among UF players, regardless of their other characteristics. Players at the highest competitive divisions were, on average, younger and less experienced than intermediate and lowest level players but reported a higher number of weekly training sessions and volume. Players at the highest competitive level also played more games during de EBUC and obtained a lower SOTG classification and SOTG score than lowest competitive level players. Therefore, in the applied field, the players who have more contact with UF have better SOTG values. This study provides scientific contribution and reference for further studies.

1.3. Recommendations for future research

Chapter 1 Therefore, there is a need to clarify the motivational self-talk and instructional produced better performance than a control condition for a strength task. An exciting avenue for future research would be important to examine and compare the SOTG with psychological correlates. **Chapter 2** Additional sociological research is needed to further investigate the ways that the nine social themes are a part of playing UF in different contexts. We presented directions for future research that appear new and particularly interesting. **Chapter 3** It would be of interest to understand these differences by isolating some of these variables (e.g., age, sex, experience, training volume, or coach-created motivational climate). Finally, future research could extend the current study by examining the effects of team competition on SOTG and performance as a function of group size, with the same or larger groups than employed here. **Chapter 4** This study provides scientific contribution and reference for further studies related with other sports. Using SOTG in different contexts would help to better understand if

the results obtained have to do with UF practitioners, or if in other collective or even individual modalities the same occurs.

1.4. Recommendations for practice

The material in **Chapter 1** suggests a few unique practical implications that can be used to inform our understanding of the relationship between psychological behavior and UF practitioners' athletes.

The material in **Chapter 2** Additionally, cooperation/friendship is a theme that is a systemic and institutionalized aspect of SOTG. They are the foundation for an ethos comprised of an overarching system of norms that permeates all divisions and levels of competition. The UF can help physical educators as they teach their classes and seek a strategy that promotes a commitment to communication and the norms linked to the SOTG.

The material in **Chapter 3**. Feedback must be focused on the developmental process and effort and not in sport results or any normative reference, something that is highly promoted during UF competitions or training. So, coaches can help athletes to focus on mastery instead of results. If coaches are not aware to highlight the best attitudes after good performances, it is possible to lose the opportunity to enhance the athlete perception of sport achievement. Therefore, we encourage coaches to balance team's ratio, to promote a good teamwork. As a self-refereed team-sport, UF has the potential to promote teamwork, task cohesion, leadership, and increase friendship-approach goals

The material in **Chapter 4** provides important information for coaches, PE teachers, and sport consultants. This information may also be of use in formulating SOTG preparation programs that could foster a commitment to good sportsmanship and enable athletes to maintain a ludic point of view when they are involved in competition. This would support physical education teachers' ability to promote moral sporting behavior in connection with sports education through UF lessons during a season (Schwamberger and Curtner-Smith, 2017).

Maintaining the SOTG during training and competition requires that every player knows the rules. Players are responsible for their behavior and self-refereeing. This is a very useful experience for children and all young people who play any collective kind of sport. Using a SOTG scoring system can teach players to be more conscience of their own actions. It can also help teams to improve their collective spirit as the SOTG is celebrated by awarding a prize to the team with the higher score. This system may provide a range of opportunities to practice justice and respect in sport to promote a positive image in terms of individual and team development, promoting integrity.

2. References

- Baccarini, M., & Booth, T. (2008). *Essential ultimate. Teaching, Coaching, Playing*. Human Kinetics.
- Griggs, G. (2011) “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee’, *Sport in Society*, 14(1), pp. 97–110. doi: 10.1080/17430437.2011.530013.
- Keathley, K., Himelein, M. and Srigley, G. (2013) ‘Youth Soccer Participation and Withdrawal: Gender Similarities and Differences’, *Journal of Sport Behavior*, 36(2), p. 171.
- Kerins, A., Scott, D. and Shafer, C. (2007) ‘Evaluating the efficacy of a self-classification measure of recreation specialization in the context of Ultimate Frisbee’, *Journal of Park and Recreation Administration*, 25(3), pp. 1–22.
- Lee, M. J., Whitehead, J. and Ntoumanis, N. (2008) ‘Relationships Among Values , Achievement Relationships Among Values , Achievement Orientations , and Attitudes in Youth Sport’, (May 2014). doi: 10.1123/jsep.30.5.588.
- Robbins, B.G. (2012) ‘Playing with fire, competing with spirit: Cooperation in the sport of ultimate’, *Sociological Spectrum*, 32(3), pp. 270–290. doi: 10.1080/02732173.2012.663713.
- Schwamberger, B. and Curtner-Smith, M. (2017) ‘Influence of a training programme on a preservice teacher’s ability to promote moral and sporting behaviour in sport education’, *European Physical Education Review*, 23(4), pp. 428–443. doi: 10.1177/1356336X16653586.
- Scott, D. et al. (2005) ‘Measuring specialization among birders: Utility of a Self-Classification measure’, *Human Dimensions of Wildlife*, 10(1), pp. 53–74. doi: 10.1080/10871200590904888.
- Spencer-Cavaliere, N., Kingsley, B. C. and Gotwals, J. K. (2017) ‘Ethic of care and the competitive Ultimate Frisbee playing experiences of young women’, *Leisure Studies*. doi: 10.1080/02614367.2015.1105859.
- Theidin Jakobsson, B. (2014) ‘What makes teenagers continue? A salutogenic approach to understanding youth participation in Swedish club sports’, *Physical Education and Sport Pedagogy*, 19(3), pp. 239-252. doi: 10.1080/17408989.2012.754003.
<https://doi.org/10.1080/17408989.2012.754003>

Discussão Geral

Uma ampla discussão sobre cada uma das principais conclusões dos quatro estudos foi incluída nos respectivos capítulos. A lógica desta secção foi reunir e integrar os contributos dos quatro estudos, resumindo os principais resultados e refletindo globalmente sobre as implicações para a investigação futura e aplicações práticas. Desde o início que uma das nossas motivações foi compreender e explorar os conceitos éticos e de fair-play dos praticantes de Elite Ultimate Frisbee (UF) e identificar a importância do Espírito do Jogo (SOTG) para praticantes de UF de elite. Daí a Questão da Investigação: Qual é a orientação dos jogadores de elite de UF? Os participantes da EBUC apresentaram um bom Espírito?

1.1 O objetivo da tese

A investigação científica sobre o UF é limitada e os resultados são incertos. Estamos perante um desporto novo e desafiante, cuja promoção se baseou numa identidade associada a um desporto para todos; com ética e uma oportunidade de prática baseada na igualdade de género e autorreferenciação. Foi demonstrado que as mulheres têm níveis de participação mais baixas no desporto formal do que os homens. Normalmente, as mulheres identificam aspetos sociais, como fazer amizades e interações positivas com os outros, como os fatores mais importantes nas suas experiências desportivas (Keathley, Himelein e Srigley, 2013; Spencer-Cavaliere, Kingsley e Gotwals, 2017). Neste sentido, o UF responde a estas motivações. Os jogadores são responsáveis pelo cumprimento da regulamentação da modalidade numa lógica de equidade, e de acordo com o princípio estruturante do jogo. Aparentemente, o SOTG não foi capaz de superar ou compensar todas as críticas associadas ao contexto concorrencial tradicional. Estes resultados exigem que a investigação no campo do desporto e da educação física (PE) compreenda-se o UF, mais especificamente o SOTG, pode ser usado como uma ferramenta educativa através da qual os jovens podem desenvolver atitudes adequadas em relação ao desporto (Thedin Jakobsson, 2014)

Seguindo uma linha de estudos dedicada ao estilo de participação no UF, Kerins, Scott e Shafer (2007) identificaram uma combinação de atitudes, comportamentos e interesses que caracterizam o envolvimento com o desporto, com diferentes níveis de compromisso. Na verdade, três estilos genéricos de participação foram propostos ao longo do contínuo da especialização (por exemplo, Casual, Ative e Serious), utilizando uma ferramenta de auto-classificação (Scott et al., 2005). A utilização desta ferramenta revelou-se eficaz na identificação e segmentação

dos participantes com interesses mais recreativos na modalidade. A necessidade de conhecer as principais razões pelas quais os praticantes se envolvem com a UF tem motivado mais investigação, especialmente no que diz respeito às praticantes femininas. Para (Spencer-Cavaliere, Kingsley e Gotwals, 2017) as principais razões pelas quais as jovens participam no desporto (ou seja, pela interação social e pela amizade) podem não corresponder às orientações do desporto tradicional competitivo (por exemplo, ênfase nos resultados). O mesmo estudo descreveu que as atletas de elite femininas, que representaram o Canadá no Mundial júnior, destacaram a natureza contextual do SOTG, do jogador de UF e o sentido de responsabilidade dos jogadores na defesa deste ethos, dos desafios, da autorregulação e das relações com os outros na comunidade desportiva, como elementos mais significativos ao nível da participação. No entanto, apesar do UF ser apelativo e uma alternativa a outros desportos (Spencer-Cavaliere, Kingsley e Gotwals, 2017) demonstraram que o SOTG não foi capaz de superar ou compensar todas as críticas associadas ao contexto competitivo tradicional. Por conseguinte, o objetivo geral desta tese é obter mais informações sobre a relação entre o UF e o SOTG; considerando vários fatores como sexo, idade cronológica, nível competitivo, divisões, sessões de treino, divisões de ranking e orientação de objetivos.

1.2. Os resultados importantes

No **Capítulo 1** o estudo proporcionou uma revisão sistemática dos domínios psicológicos associados ao UF. Identificámos linhas de investigação, mas nenhuma aborda especificamente a auto-arbitragem e a utilização da folha de espírito de jogo (SOTG). Constatámos que os objetivos do grupo e a promoção do trabalho em equipa previram significativamente a coesão social e que o trabalho em equipa e a coesão de tarefas foram mediados pela comunicação. Em resumo, o estudo fornece conhecimento em tempo real sobre o jogo e as suas regras, uma vez que existem poucos desportos de equipa que é auto arbitrado. Parece existir uma diferenciação na consciência dos jogadores sobre o jogo, utilizando a folha de SOTG como o principal fator diferenciador. No **Capítulo 2**, a revisão indica que a cooperação/amizade é um tema que demonstra um aspeto sistémico e institucionalizado do SOTG. São a base para um ethos composto por um sistema abrangente de normas que é parte integrante de todas as divisões e níveis de jogo. Como resultado, o UF assume as características de uma comunidade moral organizada em torno do espírito do jogo (Robbins, 2012). A abordagem sistémica das regras combinadas com a auto arbitragem encoraja os jovens, a lutarem pela excelência pessoal e pelo sucesso competitivo, enquanto valorizam a equidade e o respeito pelas regras e pelos seus adversários (Lee, Whitehead e Ntoumanis, 2008). Isto permite facilitar a formação de uma cultura única sustentada pelos intervenientes. Os nove estudos que revimos neste projeto pro-

porcionam um forte apoio à criação de dinâmicas sociais positivas entre os jogadores. De acordo com Baccarini e Booth (2008), o UF enfatiza a cidadania, sendo um jogo apropriado para a participação de pessoas mais novas e mais velhas, independentemente do nível de desempenho desportivo. Os praticantes deste jogo são desafiados a conceber, processar, planear e executar movimentos complexos durante o decorrer do jogo. (Griggs, 2011) apresenta o UF como um desporto de autocorreção, que por sua vez resulta num melhor cumprimento das regras formais do jogo. Os jogadores são responsáveis pelo cumprimento dos regulamentos numa lógica de equidade e dever ao princípio estruturante do jogo – SOTG (Robbins, 2012). Acreditamos que as conclusões deste estudo apoiam a dinâmica social dos participantes de UF. Em alternativa, se considerarmos os fatores de socialização, que podem levar a diferentes atletas, então reconhecemos que comportamentos corretos, podem ser desenvolvidos. Fazê-lo é uma visão muito mais significativa e promissora da dinâmica de grupo no desporto. Apresentamos direções para futuras investigações que parecem novas e particularmente interessantes (figura 1).

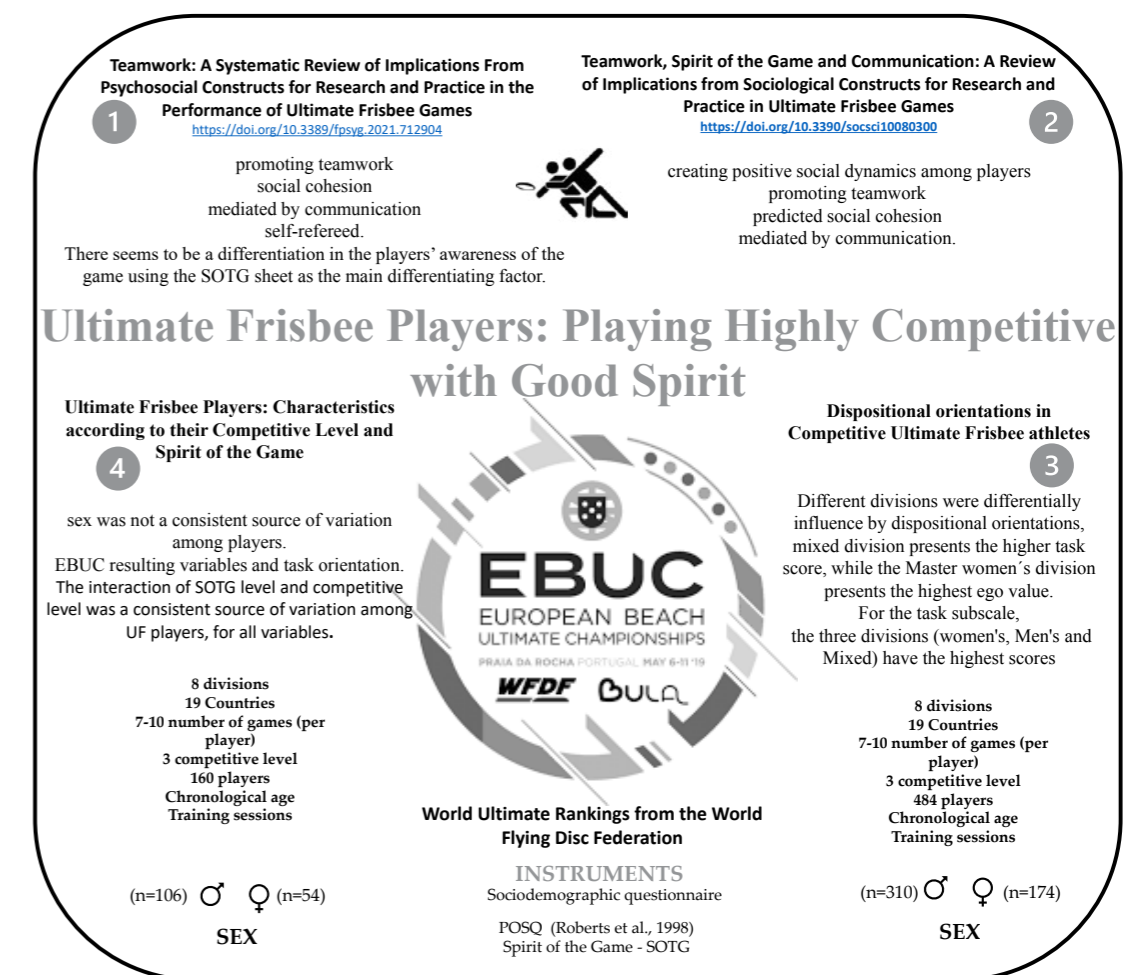


Figura 1 – Ultimate Frisbee: Jogar altamente competitivo com bom espírito (Modelo Lógico).

O **Capítulo 3** forneceu alguma evidência que indica que as elevadas orientações de tarefa dos atletas de UF definem o sucesso referentes à autoarbitragem, tais como através do domínio de tarefas, ou da melhoria das suas próprias competências pessoais. Diferentes divisões, foram distintamente influenciadas por orientações de disposição; a divisão mista apresenta a pontuação de tarefa mais elevada, enquanto a divisão feminina Master apresenta o maior valor relativo ao ego. Para a subescala de tarefas, as três divisões (feminina, masculina e mista) apresentam as pontuações mais elevadas. Existe uma variedade de variáveis ambientais e sociais que podem influenciar a orientação diferenciada, observada entre atletas de diferentes divisões. Para desvendar ainda mais a importância do UF e do SOTG isolamos as variáveis, com o Capítulo 4. Este estudo descobriu que o sexo não era uma fonte consistente, na variação entre os jogadores. Os jogadores divergiram significativamente pelo: nível competitivo, na idade cronológica, experiência desportiva, história de treino, variáveis resultantes do EBUC e orientação para a tarefa. O efeito do nível SOTG foi notado para a idade cronológica, ranking mundial de equipas, número de jogos e classificação no EBUC. A interação entre o nível de SOTG e o nível competitivo, foram dados consistentes na variação entre os jogadores de UF, para todas as variáveis. Os jogadores das divisões de nível mais elevado, ao nível da competição eram, em média, mais jovens e menos experientes do que os jogadores intermédios e de nível mais baixo, mas reportaram um maior número de sessões de treino e volume semanais. Os jogadores de nível mais elevado, também jogaram mais jogos durante o EBUC e obtiveram uma classificação no SOTG mais baixa, tal como a pontuação, do que os jogadores de nível competitivo mais baixo. Assim, os jogadores que têm mais contacto com o UF apresentaram melhores valores no SOTG. Este estudo fornece contribuições científicas e referência para novos estudos.

1.3. Recomendações para a investigação futura

Capítulo 1, por conseguinte, um vasto e excitante caminho se destaca para a investigação futura. Será importante examinar e comparar o SOTG com correlações psicológicas. **Capítulo 2** É necessária investigação sociológica adicional, para continuar a investigar as formas como os nove temas sociais fazem parte do jogo de UF em diferentes contextos. Apresentamos direções para futuras investigações que evidenciam alguma novidade e particularmente interessantes. **Capítulo 3** Seria interessante, compreender estas diferenças isolando algumas destas variáveis (por exemplo, idade, sexo, experiência, volume de treino, ou clima motivacional criado pelo treinador). Por último, a investigação futura, poderá alargar o estudo atual, examinando os efeitos da concorrência de equipas no SOTG e no desempenho em função da dimensão do grupo, com os mesmos grupos ou grupos maiores do que os empregados aqui empregados. **Capítulo 4** Este estudo fornece contribuição científica e referência para novos es-

tudos relacionados com outros desportos. A utilização do SOTG em diferentes contextos poderá ajudar a compreender melhor, se os resultados obtidos estão relacionados com os praticantes de UF, ou se noutras modalidades coletivas ou mesmo individuais ocorrerá o mesmo.

1.4. Recomendações para a prática

Um aspeto interessante do **Capítulo 1** Esta revisão sugere diferentes implicações práticas para a nossa compreensão da relação entre o comportamento psicológico e os atletas de UF. **Capítulo 2** Adicionalmente, a cooperação/amizade é um aspeto sistémico e institucionalizado do SOTG. São a base para um ethos composto por um sistema abrangente de normas que estão presentes em todas as divisões e níveis de jogo. O UF pode ajudar os educadores e professores, à medida que ensinam nas suas aulas e procuram estratégias, que promovam um compromisso com a comunicação e as normas ligadas ao SOTG. **Capítulo 3**. O feedback deve centrar-se no processo de desenvolvimento e no esforço e não nos resultados desportivos, ou em qualquer referência normativa. Algo que é bastante promovido durante as competições ou formação de UF. Assim, os treinadores podem ajudar os atletas a concentrarem-se no domínio, em vez dos resultados. Se os treinadores, não estão conscientes de destacar as melhores atitudes após boas performances, é possível que se perca a oportunidade de melhorar a perceção do atleta, da realização desportiva. Por isso, encorajamos os treinadores a equilibrar o rácio da equipa, a promover um bom trabalho em equipa. Como um desporto de equipa autoarbitrado, o UF tem o potencial de promover o trabalho em equipa, a coesão em torno das tarefas, a liderança, e melhorar os objetivos referentes à amizade **Capítulo 4**. Os resultados fornecem informações importantes a treinadores, professores de Educação Física e consultores desportivos. Podem ser úteis na formulação de programas de preparação do SOTG, que possam fomentar a experiência do desportivismo, facilitar a conduta dos atletas num ponto de vista lúdico ou de competição; bem como melhorar a capacidade do professor de educação física de promover os comportamentos morais e desportivo na Educação Desportiva através de aulas de UF durante uma temporada (Schwamberger e Curtner-Smith, 2017). A utilização do SOTG requer que todos os jogadores conheçam as regras. Os jogadores são responsáveis pelo seu comportamento e auto-arbitragem. Algo bastante útil no contexto escolar, para crianças e jovens de qualquer tipo de desporto coletivo. Esta perspetiva de pontuação pode educar os jogadores para estarem mais conscientes das suas ações, ajudar as equipas a melhorar o espírito e celebrar o SOTG, atribuindo um prémio à equipa que obtém a pontuação mais elevada. Este sistema pode proporcionar um conjunto de oportunidades para melhorar o respeito no desporto, para promover uma imagem positiva em termos de desenvolvimento individual e de equipa, promovendo a integridade.

Referências bibliográficas

- Baccarini, M., & Booth, T. (2008). *Essential ultimate. Teaching, Coaching, Playing*. Human Kinetics.
- Griggs, G. (2011) “This must be the only sport in the world where most of the players don’t know the rules”: Operationalizing self-refereeing and the spirit of the game in UK Ultimate frisbee’, *Sport in Society*, 14(1), pp. 97–110. doi: 10.1080/17430437.2011.530013.
- Keathley, K., Himelein, M. and Srigley, G. (2013) ‘Youth Soccer Participation and Withdrawal: Gender Similarities and Differences’, *Journal of Sport Behavior*, 36(2), p. 171.
- Kerins, A., Scott, D. and Shafer, C. (2007) ‘Evaluating the efficacy of a self-classification measure of recreation specialization in the context of Ultimate Frisbee’, *Journal of Park and Recreation Administration*, 25(3), pp. 1–22.
- Lee, M. J., Whitehead, J. and Ntoumanis, N. (2008) ‘Relationships Among Values , Achievement Relationships Among Values , Achievement Orientations , and Attitudes in Youth Sport’, (May 2014). doi: 10.1123/jsep.30.5.588.
- Robbins, B.G. (2012) ‘Playing with fire, competing with spirit: Cooperation in the sport of ultimate’, *Sociological Spectrum*, 32(3), pp. 270–290. doi: 10.1080/02732173.2012.663713.
- Schwamberger, B. and Curtner-Smith, M. (2017) ‘Influence of a training programme on a preservice teacher’s ability to promote moral and sporting behaviour in sport education’, *European Physical Education Review*, 23(4), pp. 428–443. doi: 10.1177/1356336X16653586.
- Scott, D. et al. (2005) ‘Measuring specialization among birders: Utility of a Self-Classification measure’, *Human Dimensions of Wildlife*, 10(1), pp. 53–74. doi: 10.1080/10871200590904888.
- Spencer-Cavaliere, N., Kingsley, B. C. and Gotwals, J. K. (2017) ‘Ethic of care and the competitive Ultimate Frisbee playing experiences of young women’, *Leisure Studies*. doi: 10.1080/02614367.2015.1105859.
- Thedin Jakobsson, B. (2014) ‘What makes teenagers continue? A salutogenic approach to understanding youth participation in Swedish club sports’, *Physical Education and Sport Pedagogy*, 19(3), pp. 239–252. doi: 10.1080/17408989.2012.754003.
- <https://doi.org/10.1080/17408989.2012.754003>

Appendix A



Spirit of the Game (SOTG)

Spirit of the Game (SOTG)

Spirit of the Game is one of the core elements in flying disc sports. It is like fair play and sportsmanship, but there is a much higher emphasis put on it in Ultimate. It is summarized in this preamble to the rules of play:

“All players are responsible for administering and adhering to the rules. Ultimate relies upon a Spirit of the Game that places the responsibility for fair play on every player. It is trusted that no player will intentionally break the rules; thus, there are no harsh penalties for breaches, but rather a method for resuming play in a manner which simulates what would most likely have occurred had there been no breach. Highly competitive play is encouraged, but should never sacrifice the mutual respect between players, adherence to the agreed-upon rules of the game, or the basic joy of play.”

Actions such as intentional fouling, cheating, dangerous plays, disrespectful conversations, and other ‘win at all costs’ behavior are contrary to the Spirit of the Game. Often a player is in a position where it is to his/her advantage to foul or commit some violation, but that player is morally bound to abide by the rules. The integrity of the sport depends on each player’s responsibility to uphold Spirit of the Game, and this responsibility should not be taken lightly.

As Ultimate is a self-refereed sport, maintaining Spirit of the Game is essential. Players must know the rules, be fair-minded and truthful, explain their viewpoint clearly and briefly, allow opponents a reasonable chance to speak and resolve disputes as quickly as possible, using respectful language.

Spirit Rules & Scoring

In a self-refereed sport such as Ultimate it is important to continuously teach and measure Spirit of the Game. For this reason, a Spirit Scoring system was developed.

Directly after a game, players rate the other team, as well as their own team, on the five fundamentals of the sport:

1. Did they know and abide by the rules?
2. Did they avoid body contact?
3. Were they fair-minded?
4. Did they show self-control and a positive attitude?
5. Did they communicate properly and respectfully?

Day . Time . Field _____

Your Team (Div) _____

Opponent _____

SPIRIT OF THE GAME SCORE SHEET

Involve your whole team when rating the other team.
Discuss each of the categories and CIRCLE a score from 0 to 4.

Poor	Not Good	Good	Very Good	Excellent
------	----------	-------------	-----------	-----------

1. Rules Knowledge and Use

Examples: They did not purposefully misinterpret the rules. They kept to time limits. When they didn't know the rules, they showed a real willingness to learn.

0*	1	2	3	4*
----	---	---	---	----

2. Fouls and Body Contact

Examples: They avoided fouling, contact, and dangerous plays. They played safely. The game flowed smoothly.

0*	1	2	3	4*
----	---	---	---	----

3. Fair-Mindedness

Examples: They apologized in situations where it was appropriate, informed teammates about wrong/unnecessary calls. Only called significant breaches.

0*	1	2	3	4*
----	---	---	---	----

4. Attitude and Self-Control

Examples: They were polite. They played with appropriate intensity irrespective of the score. They left an overall positive impression during and after the game.

0*	1	2	3	4*
----	---	---	---	----

5. Communication

Examples: They communicated respectfully. They listened. They kept discussion to reasonable limits. They got to know us. They used hand signals.

0*	1	2	3	4*
----	---	---	---	----

=

You Do the Math

Add up the points to give a total Spirit score between 0 and 20. Most games will be between 8-13 pts. A "10" is a common score.

Total

***Comments**

Write additional details about the other team's Spirit. REQUIRED if you pick a "0" or "4" in any category. Comments will not be shared publicly, but will be shared with the other team.



1-Game-SOTG-Scoring-Sheet
Copyright 2019 WFDF sotg@wfd.org

How does Spirit scoring and management work?

Spirit Scoring is especially recommended for leagues and larger tournaments. In these events a team's Spirit Captain should be responsible for collecting Spirit Scores and giving them to the Spirit Director. The Spirit Director reviews the scores for possible issues and determines what team has the highest score to be awarded the Spirit of the Game prize.

Spirit Circles

Spirit Circles are a good way to positively connect with the other team and to resolve possible conflicts. After a game is over both teams form a joined circle with alternating players. This circle can be used to highlight some positives and/or discuss issues that might have occurred during the game.

If, during a game, a team's Spirit Captain believes that either or both teams are failing to follow the Spirit of the Game, he/she may call a Spirit of the Game Time-out. During the Spirit Time-out all team members of both teams will form the Spirit Circle in the middle of the field. The two opposing team Spirit Captains shall separately discuss all current issues with adherence to SOTG, determine ways to rectify those issues, and then convey the agreement to the spirit circle.

What is it for?

Because Ultimate is a self-refereed team sport, it is essential that all players are taught/are aware that the game must be played according to the rules. Being aware of the importance of the Spirit of the Game helps to understand the rules and every player becomes more aware of what sports entail. Therefore, a Spirit of the Game marking system has been developed. Immediately after a game, players assess the opposing team and their own team according to the 5 principles of the game:

1. Do they know, and did they follow the rules?
2. Do they avoid physical contact?
3. Were they unbiased?
4. Did they show self-control and a positive attitude?
5. Did they communicate correctly and respectfully?

Within the Ultimate players' community, the result of the SOTG is considered more important than coming 1st

Moral and educational values within Ultimate

Every training assessed, all scientific articles published, and the very acknowledgement by the IOC - International Olympic Committee, are more than valid reasons to introduce Ultimate at Schools, not only as a sport but as a means to gain further knowledge on a social level and in becoming better citizens.

Spirit Captains

(Adapted by USA Ultimate from WFDF "Spirit Captain's" job description, with permission. April 2016)

Highly competitive play is encouraged, but never at the expense of mutual respect among competitors, adherence to the agreed upon rules, or the basic joy of play

Requirements:

- The spirit captain must be an active, rostered player
-

Responsibilities of the Spirit Captain:

- Before the Tournament
- Know the rules! A big component of Spirit of the Game (SOTG) is knowing and properly implementing the rules. Make sure that your teammates know the rules too!
- Talk with your team about how to engage in a discussion about calls. Remember to “**BE CALM**”:

Breathe

Explain what you think happened

Consider what they think happened

Ask for advice

Listen

Make the Call

- Respond to any requests from the Tournament Director or Spirit Director.
- Before the Game
- Meet with the opposing Spirit Captain and Observers a few minutes before the games. Introduce yourself and start off on a friendly note.
- Did your team have any issues in a previous game that you’re focusing in on improving (e.g. fast count on the mark, too much physicality on discs in the air)?
- Did your team encounter any exemplary teams or strategies that demonstrate Spirit in the highest regard? It’s always great to share these things with other teams!

During the Game

- Be proactive! Communicate with the opposing Spirit Captain as soon as any issues arise. Earlier is better than later, as this can avoid a game going “bad,” especially if each team has differing viewpoints or expectations.
- Encourage your teammates towards positive, spirited, behaviors.
- Take a few minutes to check in with the opposing Spirit Captain and Observers during halftime. Do any issues need to be corrected? Are things going great? Communicate both positive and negative aspects with the Opposing Spirit Captain. Aid your teammates in resolving Spirit issues off the field/between points and after

games. Sometimes, things get heated in during the game. Make sure to discuss any contentious calls or plays with teammates involved and offer solutions to avoid future problems.

- Work with opposing Spirit Captains to resolve any serious Spirit issues throughout the game. Take a Spirit Timeout, if necessary.

After the Game

- Help facilitate a Spirit Circle with the opposing team. If for some reason there is not time, due to schedule constraints, at least check in with the opposing team’s Spirit Captain to share any quick thoughts and decide if further discussion is needed.
- Ensure that your team scores your opponent promptly on the five principles of Spirit. Be sure to engage your whole team in this activity, using it as a chance to reflect on the game and on your own team’s spirit.
- Enter or return scores promptly to tournament organizers or scorekeepers at your field. Following each tournament’s directions for returning Spirit score sheets is really important for the system to work. This includes after your last game!
- Keep backup records of all Spirit scores. Take a picture on your phone of the scoring sheet, create a note file in your phone or on a tablet, or write them down in a notebook.

After the Tournament

- Follow up with teams if necessary.
- Respond to inquiries from other teams, Tournament Director or Spirit Director.

Example behaviors for Spirit of the Game scoring



	Poor (0) – Some “Not so Good” plus...	Not so Good (1)	Good (Normal) (2)	Very Good (3) – Some “Good” plus...	Excellent (4) – Some “Very Good” plus...
Rules Knowledge and Use	<ul style="list-style-type: none"> They repeatedly exhibited poor knowledge of the rules They often disregarded or purposefully misinterpreted the rules They refused to accept input or feedback on the rules and SOTG 	<ul style="list-style-type: none"> For the level of play, they showed a general lack of rules knowledge They disregarded or purposefully misinterpreted the rules during the game a few times They were resistant to being taught rules or elements of SOTG They didn't keep to time limits They were offside during pulls even after an initial warning 	<ul style="list-style-type: none"> For the level of play, they showed appropriate knowledge of the rules They did not purposefully misinterpret the rules When they didn't know the rules, they showed a real willingness to learn them They started on time and respected the time limits throughout They abided by the rules throughout the game 	<ul style="list-style-type: none"> For the level of play, they showed an above-average knowledge of the rules There was at least one case where they offered to help us learn some of the rules (Note: It's good Spirit to accept the offer) 	<ul style="list-style-type: none"> For the level of play, they showed excellent knowledge of the rules They explained rules we didn't know well very clearly, efficiently, and in a way that added to our joy of the game
Fouls and Body Contact	<ul style="list-style-type: none"> Even after repeated calls, they continued to have the same foul or contact issues They made several dangerous or reckless plays They made little effort to avoid body contact They frequently fouled intentionally or for tactical reasons 	<ul style="list-style-type: none"> They created a bit too much repeated non-incidental body contact There was at least one significant instance of them making a dangerous or reckless play 	<ul style="list-style-type: none"> No significant physical contact occurred beyond incidental contact No players seemed to play in a risky or hazardous manner The game flowed smoothly without frequent calls 	<ul style="list-style-type: none"> They actively avoided contact at least once They consistently played in a style that avoided the potential for both fouls and unnecessary body contact 	<ul style="list-style-type: none"> They made several clear decisions that avoided contact to keep other players unharmed Considering the competitive nature of the game, they played with the highest level of care and safety
Fair-Mindedness	<ul style="list-style-type: none"> They always only took the stance that they were right on calls When asked, teammates did not give their opinion on calls where the result could have gone against their team They made many unjustifiable calls/contests They made retaliatory calls They unduly delayed the game for tactical reasons 	<ul style="list-style-type: none"> They were quick to complain when we made a call, irrespective of the appropriateness of the call They called many insignificant breaches, (e.g. a very small travel or incidental contact that didn't affect the throw) They often gave the impression they would only see things in a manner favorable to their team They made a few unjustifiable calls/contests They were not consistent in their calls throughout the game 	<ul style="list-style-type: none"> They respected and acknowledged our opinions on calls, even when they disagreed They apologized in situations where it was appropriate (like an untested throw) They adjusted their behavior based on our feedback in a way that improved the enjoyment of the game 	<ul style="list-style-type: none"> There was at least one case where they informed teammates that they had made wrong or unnecessary calls/contests They didn't call breaches that did not affect the outcome of the action, such as a minimal travel on an unmarked thrower, or fouls on throws they made that would not have been caught anyway They retracted calls when they thought they were wrong They made calls in a consistent manner, from player to player and from beginning to end 	<ul style="list-style-type: none"> There were several clear examples of opposition players seeking to uphold the truth of a situation, even if it did not benefit them Their players helped each other make consistent, accurate calls, even if the result went against their team They remained fair-minded and consistent even in intense, crucial situations (e.g. universe point)
Attitude and Self-Control (towards players, officials, volunteers, organizers, and spectators)	<ul style="list-style-type: none"> Their players and/or sideline were often rude and discourteous There was a physical and/or verbal confrontation on- or off- the-field They deliberately damaged equipment several times They played in a manner inappropriate to the situation (e.g. patronizing trick-throw points, ultra-aggressive behavior, etc.) 	<ul style="list-style-type: none"> Their players and/or sideline sometimes exhibited a lack of self-control and positive attitude They actively celebrated our errors in an unfriendly manner directed at our players They taunted or intimidated our players They exhibited one or more instances of edge-down spiking or aggressive celebration towards opponent They deliberately damaged equipment 	<ul style="list-style-type: none"> Their players and/or sideline generally exhibited self-control and positive attitude before, during and after the game (e.g. during warmup and the Spirit circle) They were polite to us, their teammates, officials and spectators They thanked us for the game They played with appropriate intensity irrespective of the score 	<ul style="list-style-type: none"> They made an effort to make it a good and enjoyable game They communicated their point of view effectively and calmly They complimented us on a good play or celebrated good plays by either team They shared with us There were a few instances where they clearly exhibited very good self-control 	<ul style="list-style-type: none"> They went out of their way to make sure that everybody had a great game They demonstrated excellent self-control on and off the field during potentially stressful situations They exhibited the highest level of respect and positive attitude from start to finish
Communication (with teammates, opponents, officials, volunteers, organizers, and spectators)	<ul style="list-style-type: none"> They frequently refused to discuss issues/calls They got angry/reacted with contempt at several calls/contests They frequently used offensive language Their body language was frequently rude or aggressive, such as smirking or making offensive hand gestures 	<ul style="list-style-type: none"> Their players not directly involved in the play or who did not have best perspective got involved a few times without being asked There were a few instances where they were not calm while communicating There were a few instances where their body language was rude or aggressive, such as smirking or making offensive hand gestures They did not keep discussion to a reasonable duration 	<ul style="list-style-type: none"> Conflicts were resolved without incident They communicated respectfully They listened They kept discussions to reasonable time lengths They clearly explained their point of view If asked for input, their sideline/other players were helpful They understood and occasionally used official hand signals to indicate fouls, scores, etc. A Spirit time out was called 	<ul style="list-style-type: none"> If asked, they provided clear, factual explanations to support their calls They introduced themselves to us and knew our team name Their captain/leaders communicated with our leaders very effectively They brought up spirit issues and general concerns as early as possible, directly or through spirit captains They made use of official hand signals throughout the game to indicate fouls, scores, etc. 	<ul style="list-style-type: none"> They explained the game to spectators or new players They motivated us to keep high spirit and suggested or demonstrated how to do it They communicated extremely effectively and respectfully and made us feel comfortable discussing the game They always used official hand signals to indicate fouls, scores, etc., and they echoed our calls also

It's better to address problems early than to mark the other team down at the end. Spirit scoring is a group effort, so discuss this as a team. Don't give half points. When in doubt, trust the other team. And remember, **Spirit of the Game** is mindful behavior practiced by players prior to, during and after a game, in a mutual effort to protect the basic joy of play. [Send feedback to sota@wdf.org](mailto:sota@wdf.org) A4, @ May 2019

Example behaviors for Spirit of the Game scoring



This is a guide to help standardize Spirit of the Game (SOTG) scoring. Please use common sense, especially after games where the opposing team has displayed both positive and negative examples of Spirit in the same category.

	Poor (0) Some “Not so Good” plus...	Not so Good (1)	Good / Normal (2)	Very Good (3) Some “Good” plus...	Excellent (4) Some “Very Good” plus...
Rules Knowledge and Use	<ul style="list-style-type: none"> They repeatedly exhibited poor knowledge of the rules They often disregarded or purposefully misinterpreted the rules They refused to accept input or feedback on the rules and SOTG 	<ul style="list-style-type: none"> For the level of play, they showed a general lack of rules knowledge They disregarded or purposefully misinterpreted the rules during the game a few times They were resistant to being taught rules or elements of SOTG They didn't keep to time limits They were offside during pulls even after an initial warning 	<ul style="list-style-type: none"> For the level of play, they showed appropriate knowledge of the rules They did not purposefully misinterpret the rules When they didn't know the rules, they showed a real willingness to learn them They started on time and respected the time limits throughout the game 	<ul style="list-style-type: none"> For the level of play, they showed an above-average knowledge of the rules There was at least one case where they offered to help us learn some of the rules (Note: It's good Spirit to accept the offer) 	<ul style="list-style-type: none"> For the level of play, they showed excellent knowledge of the rules They explained rules we didn't know well very clearly, efficiently, and in a way that added to our joy of the game
Fouls and Body Contact	<ul style="list-style-type: none"> Even after repeated calls, they continued to have the same foul or contact issues They made several dangerous or reckless plays They made little effort to avoid body contact They frequently fouled intentionally or for tactical reasons 	<ul style="list-style-type: none"> They created a bit too much repeated non-incidental body contact There was at least one significant instance of them making a dangerous or reckless play 	<ul style="list-style-type: none"> No significant physical contact occurred beyond incidental contact No players seemed to play in a risky or hazardous manner The game flowed smoothly without frequent calls 	<ul style="list-style-type: none"> They actively avoided contact at least once They consistently played in a style that avoided the potential for both fouls and unnecessary body contact 	<ul style="list-style-type: none"> They made several clear decisions that avoided contact to keep other players unharmed Considering the competitive nature of the game, they played with the highest level of care and safety
Fair-Mindedness	<ul style="list-style-type: none"> They always only took the stance that they were right on calls When asked, teammates did not give their opinion on calls where the result could have gone against their team They made many unjustifiable calls/contests They made retaliatory calls They unduly delayed the game for tactical reasons 	<ul style="list-style-type: none"> They were quick to complain when we made a call, irrespective of the appropriateness of the call They called many insignificant breaches, (e.g. a very small travel or incidental contact that didn't affect the throw) They often gave the impression they would only see things in a manner favorable to their team They made a few unjustifiable calls/contests They were not consistent in their calls throughout the game 	<ul style="list-style-type: none"> They respected and acknowledged our opinions on calls, even when they disagreed They apologized in situations where it was appropriate (like an untested foul) They adjusted their behavior based on our feedback in a way that improved the enjoyment of the game 	<ul style="list-style-type: none"> There was at least one case where they informed teammates that they had made wrong or unnecessary calls/contests They didn't call breaches that did not affect the outcome of the action, such as a minimal travel on an unmarked thrower, or fouls on throws they made that would not have been caught anyway They retracted calls when they thought they were wrong They made calls in a consistent manner, from player to player and from beginning to end 	<ul style="list-style-type: none"> There were several clear examples of opposition players seeking to uphold the truth of a situation, even if it did not benefit them Their players helped each other make consistent, accurate calls, even if the result went against their team They remained fair-minded and consistent even in intense, crucial situations (e.g. universe point)

Example behaviors for Spirit of the Game scoring

Example behaviors for Spirit of the Game scoring (page 2)

	Poor (0) Some "Not so Good" plus...	Not so Good (1)	Good (Normal) (2)	Very Good (3) Some "Good" plus...	Excellent (4) Some "Very Good" plus...
Attitude and Self-Control*	<ul style="list-style-type: none"> Their players and/or sideline were often rude and discourteous There was a physical and/or verbal confrontation on- or off- the-field They deliberately damaged equipment several times They played in a manner inappropriate to the situation (e.g. patronizing trick-throw points, ultra-aggressive behavior, etc.) 	<ul style="list-style-type: none"> Their players and/or sideline sometimes exhibited a lack of self-control and positive attitude They actively celebrated our errors in an unfriendly manner directed at our players They taunted or intimidated our players They exhibited one or more instances of edge-down spiking or aggressive celebration towards opponent They deliberately damaged equipment 	<ul style="list-style-type: none"> Their players and/or sideline generally exhibited self-control and positive attitude They left an overall positive impression before, during and after the game (e.g. during warmup and the Spirit circle) They were polite to us, their teammates, officials and spectators They thanked us for the game They played with appropriate intensity irrespective of the score 	<ul style="list-style-type: none"> They made an effort to make it a good and enjoyable game They communicated their point of view effectively and calmly They complimented us on a good play or celebrated good plays by either team They shared with us There were a few instances where they clearly exhibited very good self-control 	<ul style="list-style-type: none"> They went out of their way to make sure that everybody had a great game They demonstrated excellent self-control on and off the field during potentially stressful situations They exhibited the highest level of respect and positive attitude from start to finish
Communication*	<ul style="list-style-type: none"> They frequently refused to discuss issues/calls They got angry/reacted with contempt at several calls/contests They frequently used offensive language Their body language was frequently rude or aggressive, such as smirking or making offensive hand gestures 	<ul style="list-style-type: none"> Their players not directly involved in the play or who did not have best perspective got involved a few times without being asked There were a few instances where they were not calm while communicating There were a few instances where their body language was rude or aggressive, such as smirking or making offensive hand gestures They did not keep discussion to a reasonable duration 	<ul style="list-style-type: none"> Conflicts were resolved without incident They communicated respectfully They listened They kept discussions to reasonable time lengths They clearly explained their point of view If asked for input, their sideline/other players were helpful They understood and occasionally used official hand signals to indicate fouls, scores, etc. A Spirit time out was called 	<ul style="list-style-type: none"> If asked, they provided clear, factual explanations to support their calls They introduced themselves to us and knew our team name Their captain/leaders communicated with our leaders very effectively They brought up spirit issues and general concerns as early as possible, directly or through (spirit) captains They made use of official hand signals throughout the game to indicate fouls, scores, etc. 	<ul style="list-style-type: none"> They explained the game to spectators or new players They motivated us to keep high spirit and suggested or demonstrated how to do it They communicated extremely effectively and respectfully and made us feel comfortable discussing the game They always used official hand signals to indicate fouls, scores, etc., and they echoed our calls also

*(towards/among teammates, opponents, officials, volunteers, organizers, and spectators)

It is expected that a typical game is a Good game with scores of 10 from both teams. It's better to address problems early than to mark the other team down at the end – your opponent should not be surprised by the score given. Spirit scoring is a group effort, so discuss this as a team. Don't give half points. When in doubt, trust the other team. Not all examples need to have occurred in order to warrant a certain score. You may also consider factors that are not described here.

And remember, **Spirit of the Game** is *mindful behavior practiced by players worldwide prior to, during and after a game, in a mutual effort to protect the basic joy of play.*

You can adjust these criteria appropriately for the region, event, playing style and/or customs of your local ultimate community. Translated and condensed versions of this are available on the WDF.org website. Feedback and ideas are encouraged at sotg@wdf.org

A4, © May 2019

How to use the Spirit of the Game Scoring System Objectives

The objectives of the Spirit of the Game (SOTG) Scoring System are to:

1. Educate players on what Spirit of the Game is
2. Help teams to improve specific parts of their Spirit
3. Celebrate SOTG by awarding a prize to the team that gets the highest score

Guidelines for Players

*Filling in the score sheets is a team effort. This helps in educating new players and reinforces the fundamentals of SOTG with the more experienced players.

*While filling in the form might take several minutes the first few times, it will take only a minute after you get used to it.

*The system was designed in accordance with the expectation that teams generally display normal, good spirit. Therefore the baseline in each category is "Good" which equals 2 Points. For each game, determine if the other team was better than, worse than, or the same as just a regular game and score accordingly (scoring examples).

*Focus on each question and answer that question only. Do not start with an overall score in mind and work backwards to get that score.

*There might be many times that nothing out of the ordinary occurred at a game. As such, each category should get 2 points. A final score of 10 points is considered normal, Good Spirit.

*Give a real score that reflects the items detailed on the sheet.

Do not give teams higher scores because they made a funny game in the circle

Do not give lower spirit scores out of retaliation or prejudice

*The Spirit Captain should bring back the sheet to the Tournament Director.

*Self-scoring is highly encouraged. Did everybody show good Spirit in your team?

Guidelines for Tournament/League Directors

- 1) Assign a Spirit Director who handles spirit scoring and related issues.
- 2) Spirit Directors can enter score into a SOTG specific Excel spreadsheet,
- 3) Spirit Captains can enter Spirit Scores via a Google Form or by filling in printed score sheets
- 4) Make detailed Spirit scores public as soon as both teams have submitted their results. This opens conversation. Shar-

ing is easy through sharing a Dropbox, or a Google Drive link. 5) Before the SOTG winner is announced, ensure that all the scores are counted and double checked. 6) When announcing the SOTG Award, try to avoid the phrase “Best Spirited team”. Instead, use something along the lines of “In celebration of Spirit of the Game, the Spirit Award goes to...” If the SOTG scoring system is filled in by all teams using the guidelines above, it will consistently do well in praising teams that deserve it and help identify teams that need guidance. If you have any comments on the scoring sheet, please contact the WFDF SOTG Committee (sotg@wfdf.org).



WFDF EVENTS - SPIRIT DIRECTOR MANUAL

March 2019

Introduction

This information is intended for the WFDF Event Manager, the Tournament Organizing Committee (TOC) including Tournament Director and appointed Spirit Director and his/her assistants for all WFDF ultimate and beach ultimate world and continental events.

The Spirit Team

The Spirit of the Game team at WFDF events consists of:

- The WFDF Spirit Director, who will have their travel costs (partially) reimbursed by WFDF according to the WFDF travel policy and who will receive accreditation, meals, accommodations and local transport from the TOC, just like other key staff.
- Spirit Assistants. The first assistant is preferably a local player/administrator appointed by the TOC pulled from the volunteer database, and if an event has over 70 teams, a second will be appointed by the TOC. They are entitled to regular volunteer benefits such as accreditation and meals.

Spirit Director Profile

- Preferably a member of the WFDF SOTG Committee or, failing that, someone recommended to and approved by the WFDF SOTG Committee and by the local National Governing Body for the country where the championship is taking place.
- Preferably have experience as Spirit Director of national or international tournaments
- Have a good knowledge of the WFDF & BULA SOTG scoring system
- Have a good knowledge of the BE CALM strategy
- Have a good knowledge of the rules of ultimate and hold a current Advanced Rules Accreditation.
- At least 5 years of ultimate playing experience with at least some top national/international experience.
- Is not playing on a team in the event and has no other coaching or administrative duties at the event (condition may be relaxed for smaller events, e.g. with less than twenty teams)



- Good communication skills
- Fluent in English
- Have their own laptop to bring to the event

Spirit Assistant (Supplied by TOC)

- Have a good knowledge of the WFDF & BULA SOTG scoring system
- Have a good knowledge of the BE CALM strategy
- Have a good knowledge of the rules of ultimate and a current Advanced Rules Accreditation.
- At least 3 years of ultimate playing experience with at least some top national/international experience.
- Is not playing on a team in the event and has no other coaching or administrative duties at the event (condition may be relaxed for smaller events, eg with less than twenty teams)
- Good communication skills
- Fluent in English

Uniforms

The Spirit Director will receive a similar uniform to other senior event management staff with "SPIRIT DIRECTOR" on the back. Additional Spirit Assistants should also wear uniforms that shows their role, e.g. with "SPIRIT TEAM" on the back.

TOC to Provide

The TOC should provide the Spirit Team with the following:

- A place on the Event website that contains information about what Spirit of the Game is, in particular for newcomers to the sport
- At least two radios for internal communication and for communication with the TOC/Competitions Team
- For each team at the event a laminated 10-game spirit scoring sheet with scoring examples on the back of the sheet
- Permanent markers, one for each team
- A location big enough and close enough to hold the Spirit Captain's meeting



- A private space for the Spirit Team to set up two laptops, preferably very close to the Competitions and I.T. teams
- A Spirit booth/desk in a public location that is highly visible and easily accessible for players where one member of the team can be based to answer questions.
 - At smaller events, the private space is more important and the public booth can be taken off the requirements, but Spirit Captains should be able to find and approach the Spirit Team in this case by giving players/volunteers the location and phone number of the Spirit Director.
- Electricity and reliable cabled Internet or WiFi at these desk(s)

Communications

- All event communications between the TOC, teams and Spirit Director, will be facilitated by the WFDF Event Manager, who will liaise with the appointed Spirit Director as early as possible
- The WFDF Event Manager should work with the Spirit Director to prepare and review a section of the pre-tournament handbook (Player Briefing Book) that will be seen by every player before the event, including:
 - Offering a link to the Spirit Captain document that explains their role
 - Emphasizing the importance that the WFDF gives to Spirit of the Game and how important their role is
 - Telling the date and time of the Spirit Captains' meeting, and informing Spirit Captains that attending the meeting is mandatory
 - Encouraging the Spirit Captain to forward the Spirit Scoring Sheet and Spirit Scoring Examples to their team, so that **all** players are familiar with it prior to the tournament
- The WFDF Event Manager will communicate to each team that they must provide the Spirit Director with the email/phone contact details of all registered Spirit Captains for the event as soon as registration is closed (at the latest six weeks before the event).
- The Spirit Director will create a master document with this contact information, and will establish direct contact with each Spirit Captain in advance of the event, in case they have specific SOTG concerns about their team, or are reaching out to help on a SOTG-related matter (e.g. if they have heard this team is looking for particular help with the SOTG materials). This initial contact information should be verified BOTH by email AND text message / cell phone, if possible, so that there are no problems with communication between Spirit Captains and the Spirit Director at the event itself.



- Spirit Director *may* need to mass-email *all*, some or individual Spirit Captains for various administrative reasons, e.g. to remind them to enter scores, to let them know where scores are displayed or to hold an emergency meeting between Spirit Captains in a particular division. Experience shows that the Spirit Director must have a fast, immediate connection with Spirit Captains to make this role as useful as possible. SMS / Instant messaging or WhatsApp may be the future in this respect.
- The Spirit Director is encouraged but not required to write a daily summary email to all the Spirit Captains, to keep them informed of any Spirit-related issues or positive feedback. This is a chance to build trust and connections with the most Spirited folks in the sport.

Spirit Director Responsibilities

Before Event

- Ask the WFDF Event Manager for the Spirit Captain contact info (mobile and email). This information should be available at about T-12 weeks.
- Ensure there is a local Spirit Assistant nominated and start conversations. The Assistant should understand Spirit of the Game and should be interested in further promoting it. He/she helps in collecting score sheets, inputting score sheets into the system, making sure that people have the right information, double checking the scores, translating where needed, etc. That person has to speak English and the local language. This is an opportunity to do a Spirit knowledge transfer.
- Organize the Spirit Captains' meeting in consultation with the WFDF Event Manager, and draft the script / outline for such a meeting. If possible, share that document with Spirit Captains in advance of the meeting, so they can come prepared with questions.
- Help ensure that all teams and players adhere to the Rules Knowledge Accreditation criteria set by the WFDF.
- Ensure that the Event website contains clear and relevant information about Spirit of the Game.
- Well in advance of the event (ideally more than twelve weeks), make sure that at the Event there will be a system to collect, enter, calculate, and disseminate Spirit scores. Talk to the TOC and Event Manager about printing of sheets, deciding on the logistics of collecting the spirit score sheets after each game, and how scorekeepers need to get organized.
- Promote good Spirit to all players online and in the Player Briefing Booklet.
- Ensure that the place where the Spirit Director and Assistant Director sit during the Event (the "Spirit Booth") is highly visible and easily accessible for players (see above).
- Work with the TOC to create laminated backup scoring sheets with examples of scoring.



At Event

- Host the **Spirit Captains' Meeting**
 - Take a roll of attendance, and immediately afterwards contact any teams who did not send a representative.
 - Have each Spirit Captain within a division sit together. Before and after the end of the meeting, encourage the Spirit Captains to stay and introduce themselves to the other Spirit Captains in their division.
 - Hand out name tag stickers (First name, country, division) so that people immediately can see who they are talking to. These can simply be hand-written. This system also helps in determining who attended the meeting. Make sure there are blank stickers for substitutions.
 - Emphasize the Spirit Captain's role during the games (specifically liaising between the two teams).
 - Tell them to use the Examples sheet when scoring.
 - Tell them Spirit scoring is a team effort and, although it inherently contains an emotional and subjective element, try to use the spirit example sheet as the primary guide and try to remain as objective as possible throughout.
 - Tell them that if they give a score of 6 or lower, not only do we expect them to give a written comment, if we come and find them, they will be able to tell us when they called the SOTG time out, or if not, why not.
 - Encourage Spirit Captains to use a spirit time out to potentially set a game back on track. Spirit time outs should not be seen as a last resort, but a useful tool to aid communication between the two teams.
 - Encourage them to visit the Spirit Booth regularly to check up on Spirit scores.
 - Emphasize that spirit is not only compatible with high-level play, it can improve and strengthen the quality of those games. Let them think about what happens in a close game if both teams adhere to SOTG principles: the play flows smoother, discussions can be there but the game is cleared from all of the elements that might negatively affect competitiveness.
 - Address recent rule changes. For example if WFDF released updates in the past year we want to make sure that everybody is on the same page and knows the latest version of the rules.
 - Encourage that they have a Spirit Circle with their opposition after each game



- Manage the Spirit Assistants.
- Collect, enter, calculate, and disseminate Spirit scores (to players at the event and to the outside world).
- Get the data in the system as soon as possible. This allows maximum time to talk to teams that have been in a bad game, or are consistently getting low scores.
- Once two teams have entered their scores, these scores should be made public so that players and the community can discuss the results and celebrate excellent examples of good spirit, or encourage teams not doing so well to improve.
- Note: While Spirit Scores should be made public as soon as possible, comments should be considered private to the teams involved, and should be shared only a) with the team for whom they are intended and b) with others as necessary to protect positive SOTG. If comments are to be shared in a public way, it should always be with prior permission, or with identifying details removed (i.e. you might share the best or worst comments of the day, but you should not identify which team said it about which team unless the teams have explicitly given permission for that use.) This is to ensure that comments are as honest and helpful as possible to the teams.
- Chase missing spirit scores to make sure that each day is complete.
- Talk to Spirit Captains of teams that gave opponents low scores to understand why and then, if needed, talk to the opponents to request to take steps so that the spirit scores will improve.
- Talk to Spirit Captains of teams that have given very high scores to the opponent (15+) to understand why.
- Talk to any team that has Spirit issues.
- Facilitate proactive group meetings between Spirit Captains in a division if that division is having problems, or between two teams that may benefit from additional Spirit guidance.
- Watch games where there may be problems, to investigate the behavior of a team, or if asked by a team for specific feedback.
- Daily meeting with the Tournament Rules Group and alert them if there is a team with issues.
- Award some of the Spirit prizes as required by WFDF. This is determined and allocated by the highest WFDF representative at the event, and depends on how many free positions we have after allocating to the VIP's and Directors of the event



Tips

As with most administrative jobs at large tournaments, the Spirit Director and his/her assistant(s) have a large logistical task. These tips may make the job easier.

At Event

- Bring a reliable laptop (or two), ideally with an up-to-date version of Windows (if using the Excel version of the scoring spreadsheet).
- Keep entered scores and feedback/notes well-organized and easily retrieved, as players may visit the "Spirit Booth" to query scores they were given or update scores as necessary.
 - E.g. One folder per division.
 - If using paper spirit entry forms, mark concerning scores with a highlighter pen and keep them prominent. Mark entered scores with a different color.
 - If using digital score submission, make a take-away list of teams to visit or investigate.
- Quick access to the schedule is important, to catch teams who need following up before/after their games (just before a warm-up might be suitable).
- At very large events, it might be necessary to send out "runner" volunteers to chase up teams who need to enter scores, or who need to be told to visit the spirit director.

Collecting and Displaying Scores

- Keep spirit scores as transparent/accessible as possible to everyone throughout the event. This may allow a team that is not doing so well to adjust their behavior based on this feedback.
- Only display the spirit scores for a game once both teams have entered their scores.
- Under some circumstances, and at the discretion of the spirit director, teams may be allowed to change the spirit score they have given to another team, based on an improved knowledge of the scoring system, or if they review the score with their team and decide that it was determined incorrectly. This can happen in particular if:
 - A. A team is new to the scoring system and accidentally gives out a very high or low score through inexperience, or
 - B. Occasionally, teams have been known to give out an incorrect score for emotional reasons, such as losing the game, or in retaliation if they believe they will be given a low score, or even based on a preconceived idea of the opposition's spirit.



Finals and Awarding the Spirit Prizes

- It is vital that **all games** count towards the awarding of the prize for SOTG, including the final(s). No Spirit Award will be given at the awards ceremony if any team score has not been accounted for and might influence the final winner, or if more games in that division could be played after the ceremony that would affect the final winner.
- For each division, the team with the highest average total SOTG score will be presented with the award for SOTG.
- **Tie-Breaker:** In the unusual event of two teams having the equal highest average total SOTG score, the award for SOTG will be presented to the team who ranked higher in competition results. Both teams should be congratulated on their exemplary spirit. This serves to reinforce the connection between SOTG and top performance.
- If possible, it is good for the Spirit Director to meet with the Spirit Captains involved in each final game, allow everyone to be introduced and remind them that SOTG is particularly visible and important in games that may be televised or have many spectators.
 - Also encourage adherence to rules that uphold good spirit, such as sideline players maintaining the 3m distance from the field of play, and players on the field keeping to discussion time limits.
- Before the final games, make sure that teams know that these games will count towards the spirit score for their opponent and it is important that they submit the score before they go off for their well-earned rest or celebration.
- For the reason above, it is very important that the winner of the prize is determined only once all scores have been entered, or, failing that, once all possible outcomes have been checked.
 - This may mean that for any missing scores, the Spirit Director should enter a 0 or a 20 and see if these change the resulting highest average score for any team in the running to win the prize.
 - However, there is some margin for error there, so it is safest if the prize is not awarded until all scores are accounted for.
- Although it may remove some of the surprise for the winners themselves, it's best to advise them ahead of time if they have won the prize, so that as many of their team as possible can attend the ceremony.
- **Triple check the scores and final standings before advising the WFDF Event Manager / Awards Host of who the winner(s) are**

Post-event

- **Within one month of the end of an event the Spirit Director will create and deliver a Spirit Report to the WFDF SOTG committee for internal use with lessons learned and**



recommendations for improvement. (We recommend drafting this even before the event starts, and working on it throughout the event. The SOTG Committee has a good outline to start from.)

- After each WFDF event the Spirit Director will identify to the SOTG Committee the teams that have issues and the Chair of the committee (or a delegated member) will follow up, within three weeks, with a personalized email to engage in dialogue about the problems
- After each WFDF event the Spirit Director will identify to the SOTG Committee the teams that showed great spirit and the Chair of the committee (or a delegated member) will follow up, within three weeks, with a personalized stock email to congratulate them and ask for tips on how they succeeded to teach other teams
- Within a week of publication, the Spirit Director emails all Spirit Captains to let them know the Spirit report is up

Appendix B

Permissions

1. ETHICS COMMITTEE

UNIVERSIDADE LUSÓFONA
I Faculdade de Educação Física e Desporto

Ethics Committee of the Faculty of Physical Education and Sports -ULHT

Report F0619

The Ethics Committee of the Faculty of Physical Education and Sport - ULHT, in a meeting on February 6, 2019, having analyzed the PhD project of José Pedro Amoroso, under the theme *Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game*, considered that due to the characteristics of the research, the work waives the need for this Committee to issue an opinion.

Director of the Ethics Committee of FEFD - ULHT



(José Gregório Viegas Brás)

2. TEOSQ

Dear Joan Duda,

I am a doctoral student at the University Lusófona – Lisbon (Portugal), completing a thesis in Sports in Ethics and Attitudes in Ultimate Disc. I am writing to ask written permission to use the *TEOSQ – Task and Ego Orientation in Sport Questionnaire* in my research study. The nature of our research, aims to evaluate Ultimate players in their genesis and orientation. My research is being supervised by my professor, Phd João Valente – dos – Santos.

The **TEOSQ** continues to be the reference worldwide with its well explained and differentiated dimensions, an indispensable factor for what we intend to investigate. We will apply the questionnaire at the European Beach Ultimate Championship **EBUC 2019**, 6th to 11th of May, with the participation of 1350 players from 23 Countries.

I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, the test questionnaire, the standard instructions for administering the test, and the scoring procedures.

I would like to use and reproduce your instrument under the following conditions:

I will use the **TEOSQ** only for my research study and will not sell or use it for any other purposes

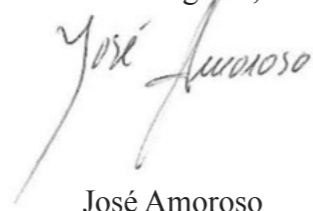
I will include a statement of attribution and copyright on all copies of the instrument. If you have a specific statement of attribution that you would like for me to include, please provide it in your response.

At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript

If you do not control the copyright for these materials, I would appreciate any information you can provide concerning the proper person or organization I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jose.amoroso@ipleiria.pt

Kind regards,



José Amoroso

3. POSQ

Dear, Glyn C. Roberts

I am a doctoral student at the University Lusófona – Lisbon (Portugal), completing a thesis in Sports in Ethics and Attitudes in Ultimate Disc. I am writing to ask written permission to use the *POSQ - Perception of Success Questionnaire* in my research study. The nature of our research, aims to evaluate Ultimate players in their genesis. My research is being supervised by my professor, Phd João Valente – dos – Santos.

The **POSQ** continues to be the reference worldwide with its well explained and differentiated dimensions, an indispensable factor for what we intend to investigate. We will apply the questionnaire at the European Beach Ultimate Championship **EBUC 2019**, 6th to 11th of May, with the participation of 1350 players from 23 Countries.

I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, the test questionnaire, the standard instructions for administering the test, and the scoring procedures.

I would like to use and reproduce your instrument under the following conditions:

I will use the **POSQ** only for my research study and will not sell or use it for any other purposes

I will include a statement of attribution and copyright on all copies of the instrument. If you have a specific statement of attribution that you would like for me to include, please provide it in your response.

At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript

If you do not control the copyright for these materials, I would appreciate any information you can provide concerning the proper person or organization I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jose.amoroso@ipleiria.pt

Kind regards,

José Amoroso

4. WFDF and BULA



APUDD - Associação Portuguesa de Ultimate e Desportos de Disco

2019

I am a doctoral student at the University Lusófona and the President of APUDD – Lisbon (Portugal), completing a thesis in Sports about *Ethics and Attitudes in Ultimate Disc*

I will use the **POSQ - Perception of Success Questionnaire and TEOSQ – Task and Ego Orientation in Sport Questionnaire** in my research study. The nature of this research, aims to evaluate Ultimate players in their genesis.

APUDD – Associação Portuguesa de Ultimate e Desportos de Disco is the official governing body for all flying disc sports in Portugal.

By this mean I would like to have your authorization to apply the questionnaires during the **EBUC** – European Beach Ultimate Championship.

Please let me know if you have any questions.

Yours sincerely,

A handwritten signature in black ink that reads 'José Amoroso'. The signature is fluid and cursive.

(José Amoroso, President)

Appendix C

Authorization

1. WFDF and BULA



Mr. José Amoroso

-by e-Mail only-

Harxheim, 27 July 2019

PhD - POSQ - Perception of Success Questionnaire and TEOSQ - Task and Ego Orientation in Sport Questionnaire

Dear Mr. Amoroso, dear José,

On behalf of the World Flying Disc Federation (WFDF) I have the pleasure to confirm that you are authorized to apply the "POSQ - Perception of Success Questionnaire and TEOSQ - Task and Ego Orientation in Sport Questionnaire" during the EBUC - European Beach Ultimate Championship 2019 and use it in your research study for your PhD.

Whilst we cannot support this project financially, we would like you to consider this as a support of the nature of this research, which aims to evaluate Ultimate players in their genesis.

Let me congratulate you on the selection of the topic and wish you all success for the PhD.

Please let me know if you have any questions.

Yours sincerely,

A handwritten signature in black ink, which appears to read "Volker Bernardi".

Volker Bernardi
WFDF Executive Director

WFDF.ORG

For more information please contact: Volker Bernardi, Executive Director
World Flying Disc Federation (WFDF), Enggasse 2a 11, D - 55296 Harxheim, GERMANY
Mobile: +49 176 64 19 77 02, eMail: ed@wfd.org – website: www.wfd.org



Appendix D

Information

1. Spirit Captains



LETTER OF INTRODUCTION

Dear Spirit Captain

I would like to thank you for your assistance in the completion of this project. I know that practice time is precious, and I will try to make this activity brief.

The Task Ego Orientation in Sport Questionnaire (TEOSQ) is designed to quantify the degree of involvement of Task and Ego in the Goal Orientation of athletes.

Perception of Success Questionnaire (POSQ) is designed to quantify the athlete's perception of Success.

It is the intent of this research to better define the types of athletes participating in the sport. By defining aspects of athlete's profile, we may be able to better understand aspects of the sport itself.

Enclosed you will find questionnaires, instructions to be read prior to fulfilling the questionnaire, and an envelope to return the completed questionnaires. It's important that athletes understand that their participation in the study is voluntary.

Five minutes should be a sufficient amount of time to complete the questionnaires.

If you have any questions in regards to the study please contact my advisor or me at:

José Amoroso - (+351) 965293048 or via e-mail at presidente@portugal-ultimate.org

Again, I would like to express my gratitude to you for your participation in the study, which is part of my work towards a PhD's degree at the University Lusófona in Lisbon. If you're interested in the results I will be glad to send you a copy.

Sincerely,
José Amoroso

President of Portuguese Ultimate and sports disc Association A.P.U.D.D. www.portugal-ultimate.org/
WFDF University and School Sports Commission - Chair
WFDF Sport for All and Development Commission



PRIOR REMARKS FOR VOLUNTARIES

The questionnaire should be administered before the competition, whenever possible. Participants should fulfill the questionnaire alone, in a quiet environment.

SCRIPT TO BE READ TO PARTICIPANTS

Please read the following statement prior to allowing the participants to begin. These questionnaires are part of a PhD research that aims to study the Ultimate player in several domains. The main purpose with this data collection is to understand player's goal orientation and players perception of success.

Your participation is completely voluntary. By completing the questionnaire, you provide implied consent to the use of the data generated by your responses to the statements.

Questionnaire 1: Task and Ego Orientation in Sport Questionnaire asks you to respond to 13 statements about your feelings of success. Respond to the statement "I feel most successful in field when..." by circling one of the numbers to the right of the statement that most represents the way you usually or generally feel about Ultimate. 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Questionnaire 2: Perception of Success Questionnaire asks you to respond to 12 statements to measure your achievement goal orientations in Ultimate. Respond to the statement "when playing ultimate, I feel most successful when..." by circling one of the letters to the right of the statement that best indicates how you feel. A = strongly agree; B = . . . ; C = Neutral; D= . . . ; E = Strongly disagree.

President of Portuguese Ultimate and sports disc Association A.P.U.D.D. www.portugal-ultimate.org/
 WFDF University and School Sports Commission - Chair
 WFDF Sport for All and Development Commission

2. Questionnaires



PERSONAL DATA

Nationality	
Division	
Name:	

1. TEOSQ - Task and ego orientation in sport questionnaire

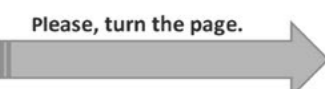
Give your reaction to the following statements in regards how you usually or generally feel about Ultimate--You are asked to rank your reaction by indicating if you:

Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

I FEEL MOST SUCCESSFUL IN FIELD WHEN...

I'm the only one who can do the play or skill	1	2	3	4	5
I learn a new skill and it makes me want to practice more	1	2	3	4	5
I can do better than my friends	1	2	3	4	5
The others can't do as well as me	1	2	3	4	5
I learn something that is fun to do	1	2	3	4	5
Others mess up and I don't	1	2	3	4	5
I learn a new skill by trying hard	1	2	3	4	5
I work really hard	1	2	3	4	5
I score the most points	1	2	3	4	5
Something I learn makes me want to go and practice more	1	2	3	4	5
I'm the best	1	2	3	4	5
A skill I learn really feels right	1	2	3	4	5
I do my very best	1	2	3	4	5

Please check if you completed all the answers.



President of Portuguese Ultimate and sports disc Association A.P.U.D.D. www.portugal-ultimate.org/
 WFDF University and School Sports Commission - Chair
 WFDF Sport for All and Development Commission

Appendix E

Acceptance of scientific article

1. MDPI

 **MDPI Billing** <billing@mdpi.com>
ter, 03/08/2021 13:36

Para: José Pedro Santos Cadima Amoroso
Cc: Guilherme Eustáquio Furtado <furts2001@yahoo.com.br>; Crina Marina <crina.marina@mdpi.com>; Billing Dpt <billing@mdpi.com> **Mais 1 pessoa**

 Invoice_MDPI_socsci-129...
33 KB

Dear Dr. Amoroso,

Your paper has been **accepted** for publication in the journal Social Sciences. The **article** processing charge is 0 (zero) CHF. The attached invoice is for information only and does not require any action from your side.

We will publish your paper as soon as the proofreading and editing have been completed.

The invoice is related to the following manuscript:

Manuscript ID: socsci-1294026

Type of manuscript: Review

Title: Qualitative research review about Ultimate Frisbee: Forever alternative? Or the real game?

Authors: José Amoroso *, Jay Coakley, Ricardo Rebelo-Gonçalves, Raul

Antunes, João Valente-dos-Santos, Guilherme Eustáquio Furtado *

Received: 25 June 2021

Let me know if you have any questions.

Kind regards,
MDPI Billing Team

MDPI

St. Alban-Anlage 66

4052 Basel, Switzerland

Tel. +41 61 683 77 35; Fax +41 61 302 89 18

E-mail Accounting: billing@mdpi.com

<https://eur02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.mdpi.com%2F&data=04%7C01%7Cjose.amoroso%40jpleiria.pt%7Cffc33336aba04adc352308d9567b3b2a%7C536b85ada4484186a9afe3ccad3302c5%7C0%7C1%7C637635909649900651%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLjBtIi6i6k1haWwlcjVCI6Mn0%3D%7C0&data=3MHxnZts7Coc0kZwOL5ZZ8haWl8jqW2m7Tt1gkco%3D&reserved=0>

<https://eur02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.mdpi.com%2F&data=04%7C01%7Cjose.amoroso%40jpleiria.pt%7Cffc33336aba04adc352308d9567b3b2a%7C536b85ada4484186a9afe3ccad3302c5%7C0%7C1%7C637635909649900651%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLjBtIi6i6k1haWwlcjVCI6Mn0%3D%7C0&data=3MHxnZts7Coc0kZwOL5ZZ8haWl8jqW2m7Tt1gkco%3D&reserved=0>

2. Frontiers

Frontiers: Your manuscript is accepted - 712904

Respondeu a sex, 13/08/2021 16:19

Traduzir a mensagem para: Português (Brasil) | Nunca traduzir do: Inglês

FP Frontiers Psychology <psychology.editorial.office@frontiersin.org>
seg, 26/07/2021 16:51
Para: José Pedro Santos Cadima Amoroso

Dear Dr Amoroso,

Frontiers Psychology has sent you a message. Please click 'Reply' to send a direct response

I am pleased to inform you that your manuscript "Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games" has been approved for production and **accepted** for publication in **Frontiers** in Psychology, section Movement Science and Sport Psychology. Proofs are being prepared for you to verify before publication. We will also perform final checks to ensure your manuscript meets our criteria for publication (<https://www.frontiersin.org/about/review-system#ManuscriptQualityStandards>).

The title, abstract and author(s) list you provided during submission is currently online and will be replaced with the final version when your **article** is published. Please do not communicate any changes until you receive your proofs.

Any questions? Please visit our Production Help Center page for more information: <https://zendesk.frontiersin.org/hc/en-us/categories/200397292-Article-Production->

Manuscript title: Teamwork: a systematic review of implications from Psychosocial constructs for research and practice in the performance of Ultimate Frisbee games
Journal: **Frontiers** in Psychology, section Movement Science and Sport Psychology
Article type: Systematic Review
Authors: José Pedro Amoroso, Ricardo Rebelo-Gonçalves, Raul Antunes, Jay Coakley, Pedro Teques, João Valente-dos-Santos, Guilherme Eustaquio Furtado
Manuscript ID: 712904
Edited by: Donatella Di Corrado

You can click here to access the final review reports and manuscript: <http://www.frontiersin.org/Review/EnterReviewForum.aspx?activationno=4b9795a5-9cfc-4be7-b99e-c42f6a8f661f>

As an author, it is important that you keep your **Frontiers** research network (Loop) profile up to date, so that you and your publications are more discoverable. You can update your profile pages (profile picture, short bio, list of publications) using this link: <https://loop.frontiersin.org/people/>

Tell us what you think!

At **Frontiers** we are constantly trying to improve our Collaborative Review process and would like to get your feedback on how we did. Please complete our short 3-minute survey and we will donate \$1 to Enfants du Monde, a Swiss non-profit organization: https://frontiers.qualtrics.com/jfe/form/SV_8q8kYmXRvx8H5at?survey=author&aid=712904&uid=

3. Cuadernos del deporte



Dr. D. Antonio Hernández Mendo
Director
Catedrático Psicología del Ocio, de la
Actividad Física y el Deporte
Universidad de Málaga

Málaga, 24 de septiembre de 2021

José Pedro Santos Cadima Amoroso

Raul Antunes

João Valente-dos-Santos

Guilherme Furtado

Ricardo Rebelo-Gonçalves

El artículo titulado "**Clima Motivacional en Ultimate Frisbee**" ha sido aceptado para su publicación en Cuadernos de Psicología del Deporte en el nº2 volumen 22 de al año 2022.

La revista CUADERNOS DE PSICOLOGÍA DEL DEPORTE (ISSN: 1578-8423) está indexada en **Scopus con IF: 0,284 (Q3)**. Además está indexada en las siguientes Bases de Datos: **EBSCO-HOST, PSYCINFO, SPORTDISCUS, REDALYC, Scielo, IN-RECS, Catálogo Latindex, DICE (CINDOC-CSIC-ANCA), ANEP, ISOC-Psicología, (CINDOC-CSIC), Dialnet, Psicodeporte, RESH, Océano, Psicodec, IBECS.**

Agradeciendo de antemano su esfuerzo, sin otro particular, reciba un cordial saludo.

HERNANDEZ MENDO ANTONIO - 07832542F Firmado digitalmente por HERNANDEZ MENDO ANTONIO - 07832542F
Fecha: 2021.09.24 19:16:35 +02'00'

Fdo.: Dr. D. Antonio Hernández Mendo
Director

ACEPTACIÓN DE ARTÍCULO CIENTÍFICO

4. PLOS ONE

PLOS ONE: Notification of co-authorship on manuscript - [EMID:3364dfa4bd300e1e]

Traduzir a mensagem para: Português (Brasil) | Nunca traduzir do: Inglês

PO em.pone.0.799506.5ea046a5@editorialmanager.com em nome de PLOS ONE <em@editorialmana>
qui, 24/02/2022 22:36
Para: José Pedro Santos Cadima Amoroso

PONE-D-22-05656
Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game
Dr Raul Antunes

Dear José Amoroso,

You are receiving this email because you have been listed as an author on a manuscript recently submitted to PLOS ONE, which is entitled "Ultimate Frisbee Players: Characteristics according to their Competitive Level and Spirit of the Game".

The corresponding author for the submission process is: Dr Raul Antunes
The full author list for the submission is: José Pedro Amoroso; João Valente dos-Santos; Guilherme Furtado; Rebelo-Gonçalves Rebelo-Gonçalves; Raul Antunes; Luís Calmeiro

You are not required to confirm your co-authorship of this submission, but if you would like to add an ORCID iD please click the link below to confirm co-authorship and link your ORCID iD.
[Yes, I am affiliated.](#)

Please note that if you would like to link your ORCID iD to the submission, you will need to log in to your Editorial Manager account to do so. If you do not have an Editorial Manager account, you can register here: <http://www.editorialmanager.com/pone/Default.aspx>.

Appendix F



Curriculum Vitae

Curriculum Vitae

1. Personal and Professional Data

1.1. Personal data

Full name: José Pedro Santos Cadima Amoroso

National identity card: 10602782

Birthplace and date: Leiria, 1975

Nationality: Portuguese

Institutional address: Politécnico de Leiria – Escola Superior de Educação e Ciências Sociais,
Rua Dr. João Soares Apartado 4045 | 2411-901 Leiria, Portugal

Living address: Praceta Joaquim Dias Ramadas N°33; 1ºDto 2410- 115 Leiria - Portugal

Contact data: +351 965293048, jpscamoroso@gmail.com ; jose.amoroso@ipleiria.pt
presidente@portugal-ultimate.org

1.2. Academic degrees

2018-2021 - Phd student at the Lusófona University

2014 - Professor Specialist in Fitness

2009-2011- Master of School Physical Education Rio Maior Sports School with final grade (15 values);

2005 - Certified teacher by the Scientific Council - the Pedagogical training with the trainer status; Lusófona University Degree in Physical Education and Sport Course with the final note (14 values);

2002-2003- Advanced course of Management Program at INDEG / ISCTE Lisbon;

1994-1995- Often in the 12th grade in high school Domingos Sequeira - Leiria;

1992-1994- Often in 10 and 11 years in the High School Domingos Sequeira - Leiria ending with a final average course of twelve (12) values and final average in the vocational training component of sport with fifteen (15) values.

1.3. Social Skills

Implementation of Ultimate Frisbee in Portugal, sport practiced all over the world, by people with different cultures and ideals, where communication is a key factor for efficient work.

1.4. Organization Skills

Worked at Inside Stuff Management, the company that was hired by Alverca SAD.

Was responsible for the communication of all events at home.

Participated in the farewell to the Luz Stadium, by selling t-shirts.

Worked in the organization of "penalty Fidelidade"

Worked in organizing the "best player of the day" from LG

Organized the 1st National Ultimate Frisbee Championships in Portugal in 2003

Participated in the world championship of ultimate frisbee 2004 - Figueira da Foz

As created Leiria Flying Objects – Ultimate Frisbee Team (2012)

Organized “Ultimate School Meeting since 2014 until 2019

Was part of the team who organized EBUC 2019 with 1350 players from 22 countries.

1.5. Previous and current scientific and professional activities

Over 20 years of professional experience in the field of Physical Education and Sport, having exercised activities in the areas of Education, Pedagogy, PE in several sports, exercised self-employed in schools and gyms, as discriminates below, the throughout the Curriculum Vitae. President National Association of Ultimate and Sports Disc, WFDF University and School Sports Commission – Chair, WFDF Sport for All and Development Commission

(2017-2021)

Education level (Teaching)

Teaches at Leiria Polytechnic Institute (IPLeiria-ESECS) as full time Teacher of the 1st Cycle education. UC teaches master's degree in Pre-School Education and Preschool Education.

Teaches the UC racket sports, Volleyball and others.

Researcher in CIEQV

(2008 -2017)

Education level (Teaching)

Teaches at Leiria Polytechnic Institute (IPL-ESECS) as Teacher of the 1st Cycle education. UC teaches master's degree in Pre-School Education and Preschool Education. Teaches the UC racket sports and others.

As a PE independent gives lessons Motor worker in Jardim Escola João de Deus (1st year, 2nd Year, 3rd year and 4^oanos), 8 classes of the 1st cycle.

In the Centro Social e Paroquial dos Pousos of Physical Expression gives lessons Motor (nursery, 1.2 and 3 garden and ATL) in pre-school education for a total of 450 students.

Sports scope (Health and Wellness)

In the Health Club Corpo Livre. Gives cycling lessons, swimming, Hidrobike and Switching, 12 hours per week. Under the Sports Training.

(2006-2008)

Education level (Teaching)

As a PE independent gives lessons Motor worker in Jardim Escola João de Deus (red pinafore, blue pinafore, 1st year, 2nd Year, 3rd year and 4^oanos), 8 classes of the 1st cycle and 4 classes in preschool.

In the Centro Social e Paroquial dos Pousos gives PE lessons (nursery, 1.2 and 3 kindergarden) in pre-school education for a total of 500 students, 30 hours per week.

Sports scope (Health and Wellness)

In the Health Club Corpo Livre works in Cardio room - Bodybuilding. Gives indoor cycling lessons and Hidrobike;

Gives swimming lessons to students from 3 to 10 years old.

(2004-2006)

Education level (Teaching)

Trainee teacher of Physical Education in Secondary School Marquesa de Alorna in Almeirim. Responsible for four groups of Secondary Education and the team of men's volleyball in junior school sports variant. With a final score of 17.

Sports scope (Health and Wellness)

In the Health Club Corpo Livre works in Cardio room; Group lessons (Cycling and Switching)

(2003-2004)

Training (Formation)

Speaker at the Third Congress held at the Dragon School Sports Stadium on "The Ultimate Frisbee in school" (May 2004)

Lecturer in the workshop of "Ultimate Frisbee in the school" Marquesa de Alorna

Lecturer in action Ultimate Frisbee training in EB 2, 3 Rates in Vila do Conde.

- He made a display of "Ultimate Frisbee" at the fair "Expo Fit" on Fil in Lisbon.

- Organized the 1st National Ultimate Frisbee Championships.

(2002-2003)

Sports Marketing

Stage in the company "Inside Stuff Management" in Lisbon, where he worked as creative and production of events (Ana Matias and Pedro Couceiro company);

- He made a show of Ultimate Frisbee in the University Lusófona of Lisbon;

- He made a display of "Ultimate Frisbee" at the fair "Expo Fit" on Fil in Lisbon;

- Worked in partnership with the Portuguese Olympic Committee.

(2001-2002)

Sports (Health and Wellness)

In the Health Club Corpo Livre works as an intern in the Cardio room; Group lessons (Cycling and Switching)

(2000-2001)

Education level (Teaching)

He gave swimming lessons to the 1st cycle of basic education in the school sports strand;

Education level (Teaching)

Frequency of the course of Physical Education and Sport at the University Hoogeschool Flanders in Bruges, Belgium, under Chapter Socrates Erasmus;

Ultimate Frisbee classes; Rope Skipping; Field Hockey;

(1999-2000)

Sports Marketing

Made a study of Euro 2000 in Belgium (Police, Tourism, players and tourists);

Education (Curriculum and Special Education)

Basketball and Volleyball taught to children with disabilities to auditory and motor skill levels at the University Hoogeschool Flanders in Bruges, Belgium;

Education level (Teaching)

He gave swimming lessons to the 1st cycle of basic education in the school sports strand

2. Research

2.1. Books and E-books

Amoroso, J. (2016) Programa ultimate e desportos de disco nas escolas, 2015-2016 / - 1ª ed.

- Leiria: Escola Superior Educação e Ciências Sociais - Instituto Politécnico de Leiria: Associação Portuguesa de Ultimate e Desportos de Disco, 2016. - ISBN 978-989-8797-10-0

Amoroso, J. (2019) Manual Ultimate e Desportos de Disco nas Escolas - 1ª ed. - Leiria: Escola Superior Educação e Ciências Sociais - Instituto Politécnico de Leiria: Associação Portuguesa de Ultimate e Desportos de Disco, 2019. - ISBN 978-989-8797-31-5

Amoroso, J. (2020). Ultimate at Schools Program Teachers File - for Physical Education Teachers (primary to secondary school). 1ª edição, WFDF. World Flying Disc Federation. Colorado Springs, Estados Unidos da América. ISBN 978-3-00-065900-3.

2.2. Chapters in books

Amoroso, J., Rebelo-Gonçalves, R., Antunes, R., Furtado, G., & Valente-dos-Santos, J. (2020). Desporto Inovação e Formação de Treinadores. (Capítulo X, pp. 151-166). Santarém: Edições CIEQV.

2.3. Articles in peer review international journals

Amoroso J.P, Rebelo-Gonçalves R, Antunes R, Coakley J, Teques P, Valente-dos-Santos J and Furtado GE (2021) Teamwork: A Systematic Review of Implications From Psychosocial Constructs for Research and Practice in the Performance of Ultimate Frisbee Games. *Front. Psychol.* 12:712904. doi: 10.3389/fpsyg.2021.712904

Amoroso, J. P., Coakley, J., Rebelo-Gonçalves, R., Antunes, R., Valente-dos-Santos, J., & Furtado, G. E. (2021). Teamwork, Spirit of the Game and Communication: A Review of Implications from Sociological Constructs for Research and Practice in Ultimate Frisbee Games. *Social Sciences*, 10(8), 300.

<https://doi.org/10.3390/socsci10080300>

2.4. Articles in peer review national journals

Amoroso, J. & Varregoso, I. (2014). Ultimate Frisbee – um desporto para as Escolas.

Revista da Sociedade Científica de Pedagogia do Desporto, 1 (5), 2014, p. 49-54.

Amoroso, J., Varregoso, I. & Cruz, J. (2018). Ultimate Frisbee: Desporto na Natureza Ultimate Frisbee. Abordagens sobre o desporto de natureza. ISBN 978-989-8936-02-8 1ª edição, 2018 p. 81-90.

2.5. Oral Communications/Posters

Amoroso, J., Rebelo-Gonçalves, R., Antunes, R., Furtado, G., & Valente-dos-Santos, J. (2020).

Task and ego goal orientation in ultimate frisbee. Encontro Ciência, Lisboa: Portugal.

Amoroso, J., Coelho, L., Monteiro, D., Morouço, P., Matos, R. (2021). Precisão do lançamento do frisbee em backhand e forehand em crianças inexperientes: diferenças de desempenho em pé e sentado. 16.º Seminário de Desenvolvimento Motor da Criança, Évora: Portugal.

Amoroso, J., Coelho, L., Monteiro, D., Morouço, P., Matos, R. (2021). Precisão do lançamento do frisbee em backhand e forehand em jogadores experientes: diferenças de desempenho em pé e sentado. 3º Fórum REDESPP, Coimbra: Portugal.

Pereira, A., Amoroso, J., Santos, F., Borrego, C., Antunes, A., Figueiredo, A. (2021). A formação em Ética e Desporto. Projeto colaborativo no âmbito da REDESPP. 3º Fórum REDESPP, Coimbra: Portugal.

Amoroso, J., Valente-dos-Santos, J., Furtado, G., Rebelo-Gonçalves, R., & Antunes, R. (2021). Discrimination of Ultimate Frisbee Players by Spirit of the Game and competitive level. XXII Jornadas da Sociedade Portuguesa de Psicologia do Desporto, Leiria: Portugal.

2.6. Abstracts in international conference proceedings

Amoroso, J., Rebelo-Gonçalves, R., Antunes, R., Furtado, G., & Valente-dos-Santos, J. (2020).

Achievement Orientations in Competitive Ultimate Frisbee: Psychometric Measures and Division Differences. CIEQV's 1st International Congress: Rio Maior Portugal.

2.7. Reviewer in international journals

BMC Pediatrics: Ref: Submission (October 2021; Manuscript ID 68240324-dc91-43be-8934-ff65d6761756)

2.8. Mediator in Congress

Mediator in the 3rd Forum REDESPP (November 2021)

2.9. Erasmus Projects

2.9.1. Coordinator of the Comenius Program in Jardim Escola João de Deus - Leiria "The Ted's Project" (2013-2015) with the following countries: Finland / Ireland / Italy / Hungary // Denmark and Romania.

<http://tedproject.eu/wordpress/>

2.9.2. Coordinator of the ERASMUS program in Jardim Escola João de Deus - Leiria "Educating Emotions Programme Esther in Europe" (2014-2016) with the following countries: Spain / Latvia / Greece / Hungary // France. <http://www.programaesther.com/indexen.html>

2.9.3. Coordinator of the Comenius Program in the Social Center of Pousos "Cycling Through the times and places" (2013-2015) with the following countries: Spain / Italy / Poland // Turkey and Greece. <http://cytipla.wikispaces.com/>

2.9.4. H.E.ST.I.A. Helping Students In Acceptance (2017-2019) with the following countries: Greece/ Netherlands/ Belgium/ Italy/ Portugal/ Spain

<https://kavafisschool.wixsite.com/hestia>

2.9.5. Coordinator of the ERASMUS + project Village on Move Network – VOMNET (2018-2019) with the following countries: Lithuania/ Finland/ Belgium/ Portugal/

<https://www.villagesonmove.com/villages-on-move-network/>

2.9.6. Coordinator of the ERASMUS + project Village on Move GO – VOMNET (2019-2021) with the following countries: Lithuania/ Finland/ Belgium/ Portugal/ Slovenia/ Cyprus

<https://www.villagesonmove.com/villages-on-move-go/>

3. Teaching

3.1. Teaching service in higher education

(2008-2017) Teaches at Leiria Polytechnic Institute (IPLeiria-ESECS) as assistant professor of the 1st Cycle education.

(2017 -2022) Teaches at Leiria Polytechnic Institute (IPLeiria-ESECS) as full time professor of the 1st Cycle education. Teaches master's degree in Pre-School Education and Preschool Education. Teaches the UC racket sports, Volleyball and others.

3.2. Teaching service in primary education

(2004 -2017) As a PE independent teacher gives PE lessons in Jardim Escola João de Deus (kindergarden, 1st year, 2nd Year, 3rd year and 4th grade), 8 classes of the primary school and 4 classes in kindergarden, for a total of 800 students, 20 hours per week

In the Centro Social e Paroquial dos Pousos gives PE lessons (nursery, kindergarden) for a total of 500 students, 12 hours per week.

4. Transfer and use of Knowledge

4.1. National Oral communications/ workshops/ Courses for teacher's and coaches

4.1.1. Basic School 2.3 of Rates (2002/2003)

4.1.2. University Lusófona (2002/2003)

4.1.3. Third Congress School Sports (Dragão Stadium, Porto, 2004)

4.1.4. Schools 2.3 Batalha (2003/2004)

4.1.5. Secondary School Marquesa de Alorna (2003/2004)

4.1.6. Primary School 2.3 of Marrazes (2004/2005)

4.1.7. Externato Dom Fuas Roupinho. Nazare (2008)

4.1.8. School of Sport Rio Maior (2008/2009)

4.1.9. Healthy Maia, for games & fun in collaboration with the University of Porto (2009, accredited training)

4.1.10. Innovation and Sports, with games & fun in collaboration of the University of Porto (2010, accredited training)

4.1.11. Open Day School 2.3 of Marrazes (2013)

4.1.12. Workshop Moimenta da Beira schools (2013)

4.1.13. UBI, Covilhã (2013, accredited training)

4.1.14. Ludo Fit, Leiria (2013)

4.1.15. School Guilherme Stephens, Marinha Grande (2014)

4.1.16. Open Day School 2.3 of Marrazes (2014)

4.1.17. Easter holidays of Corvos do Liz on Cruz d'Areia and School Correia Mateus (2014)

4.1.18. Easter holidays Lis Tiger Club Boa Vista (2014)

4.1.19. Easter Holidays House Museum João Soares, Cortes (2014)

4.1.20. Celebrations of the 40th anniversary of the April 25, Leiria (2014)

4.1.21. I Sports Association (Advancing), Leiria (2014)

4.1.22. Festand Batalha (2014)

4.1.23. School Correia Mateus, Leiria - Training LFO Lubrigaz Skoda (2014)

4.1.24. Bringing Maria Imaculada College, Leiria - Training LFO Lubrigaz Skoda (2014)

4.1.25. School Guilherme Sephens, Marinha Grande - Training LFO Lubrigaz Skoda (2014)

4.1.26. Arena Sport, Pedrogão Beach, Leiria (2014)

4.1.27. School Dr José Saraiva, Leiria - Training LFO Lubrigaz Skoda (2014)

4.1.28. Secondary School Afonso Vieira Lopes, Leiria - Training LFO Lubrigaz Skoda (2014)

4.1.29. Festival A PORTA, Leiria (2014)

4.1.30. Sports Day, Batalha (2014)

4.1.31. Secondary School Domingos Sequeira, Leiria - Training LFO Lubrigaz Skoda (2014)

4.1.32. College Dinis de Melo, Amor, Leiria - Training LFO Lubrigaz Skoda (2015)

4.1.33. Ultimate Workshop - Polytechnic Institute of Porto (October 2015)

4.1.34. Workshops (Group 160) - DSDE -1st CEB - Funchal (November 2015)

4.1.35. Workshop, Desporto Escolar – PNED – APUDD - Marinha- Grande, Portugal (December 2015)

4.1.36. Workshop Desporto Escolar – PNED – APUDD – Aveiro, Portugal (February 2016)

4.1.37. Workshop Desporto Escolar – PNED – APUDD – Coimbra, Portugal (Julho 2017)

4.1.38. Workshop Desporto Escolar – PNED – APUDD – Braga, Portugal (July 2018)

4.1.39. Workshop Desporto Escolar – PNED – COP – APUDD – Torres Novas, Portugal (Julho 2019)

- Workshop Desporto Escolar – PNED – COP – APUDD – Torres Novas, Portugal (July 2019)

4.1.40. Workshop Desporto Escolar – PNED – COP – APUDD – Pinhal Novo, Portugal (September 2019)

4.1.41. Workshop Desporto Escolar – PNED – COP – APUDD – Loures, Portugal (September 2021)

4.1.42. Workshop Desporto Escolar – PNED – COP – APUDD – Portimão, Portugal (October 2021)

4.2. International oral communications/ workshops/ Courses for teacher's and coaches

- 4.2.1. Monageer National School, Enniscorthy, Ireland (2013)
- 4.2.2. 18th Public Primary School of Patras, Patras, Greece (2013)
- 4.2.3. Region of the Sports Village Hyderabad, Andhra Pradesh (2013)
- 4.2.4. Circolo Didattico Amatuzio, Bojano, Italy (2013)
- 4.2.5. Colegio de Educacion Infantil "Nuestra Señora de peñarroya, Argamasilla de Alba, Spain (2014)
- 4.2.6. Kestelli Serife EczacibasiOrtaokulu, Izmir, Turkey (2014)
- 4.2.7. Maglegaardsskolen, Copenhagen, Denmark (2014)
- 4.2.8. Region Sports Festival of Hyderabad, Andhra Pradesh (2014)
- 4.2.9. Mission Dulombi, Guinea (2014)
- 4.2.10. Szent Imre Katolikus Általános Iskola are Job Pásztor Óvoda, Hungary (2014)
- 4.2.11. Czestochowa, Poland (2014)
- 4.2.12. Primary School CEIP Pedro Rodriguez Perez, Cieza, Spain (2015)
- 4.2.13. Vallilan Ala -Asteen koulu, Helsinki, Finland (2015)
- 4.2.14. 6th Primary School of Egaleo, Athens, Greece (2015)
- 4.2.15. Istituto Statale Comprensivo "Masaccio" San Giovanni Valdarno, Italy (2015)
- 4.2.16. Scoala Gimnaziala # 13, Sibiu, Romania (2015)
- 4.2.17. Kecsckemeti Foiskola Petofi Sandor Gyakorlo ALTALANOS Iskola es Gyakorlo Óvoda, Kecsckemeti, Hungary (2015)
- 4.2.18. Naujenes prirmsskolas izglītības iestāde Rukitis, Daugavpils Latvia (2015)
- 4.2.19. Erasmus STA – Teachers Course – Brno, Czech Republic (Mars, 2017)
- 4.2.20. Training Course Erasmus+ “Olympism for values education” – Druskininkai, Lithuania (November 2017)
- 4.2.21. Erasmus + XAMK, South-Eastern Finland University of Applied Sciences, Mikkeli, Finland (January 2018)
- 4.2.22. Represented Portugal, by the Portuguese Sports Confederation in "European Sports for All Games – Netherland, Leewarden -Fryslan (August 2018)
- 4.2.23. Erasmus + UC Leuven Limburg, Leuven, Belgium (October 2018)
- 4.2.24. Erasmus + KAUNO KOLEGIJA, Kaunas, Lithuania (March 2019)
- 4.2.25. As WFDF University and School Sports Commission – chair. Meeting in Heildeberg, Germany (July 2019)

4.2.26. Erasmus + Center for social innovation, Lanarca, Cyprus (March 2020)

Cape verde Project – Partnership with Olympic Comite of Cape Verde and minister of education (March 2021)

4.2.27. Erasmus STA – Teachers Course – Zagreb, Croatia (October 2021)

4.2.28. Erasmus STA – Teachers Course – Ljubljana, Slovenia (October 2021)

5. Sports Experience

5.1. Career as an athlete

5.1.1. (1983 – 1984) Sports (Sports Training - Sports Fighting - Judo). He practiced Judo in Judo Dragon Club, as federated athlete

5.1.2. (1985 – 1986) Sports (**Sports Training - Racket Sports - Tennis**). Represented the Leiria School Tennis Club, as federated athlete in TOURNAMENT SPORT GOOFY in ranking of Children.

Sports (Sports Training - Swimming)

5.1.3. (1986 – 1988) Practiced swimming in the ranks of initiates and juveniles.

Sports (Sports Training - Athletics)

5.1.4. (1987 – 1988) He practiced athletics at the launch variant of weight in the juvenile category.

5.1.5. (1988-2000) Sports (Sports Training - Handball)

- Practiced, Handball as federated athlete in children earners started, youth and senior;

5.1.6. (1998-2002) Sports (Sports Training - Volleyball and Beach Volleyball)

- Practiced volleyball in academic club Leiria, where he played the 3rd National Division; He played beach volleyball National Championship being placed 16th in the national ranking; Practiced volleyball in Academic Leiria Club, where he played the 3rd National Division; He played the National Championship Beach Volleyball

5.1.7. (2004-2021) Sports (Sports Training - Ultimate frisbee and Ultimate Beach Frisbee) Practiced Ultimate Frisbee in Leiria Flying Objects club, where he played the National Championship; Practiced Ultimate Frisbee at the University Hoogeschool Flanders in Bruges, Belgium;

5.1.8. (2010-2021) Sports (Sports Training – Padel)

5.2. Coaching habilitations

Coach of Handball

Coach of Volleyball

Coach of Ultimate Frisbee

Technical Director (health clubs)