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Front Pages

Athens Journal of Sports

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The current issue is the third of the nineth volume of the *Athens Journal of Sports,* published by the Sport, Exercise, & Kinesiology Unit of the ATINER under the aegis of the Panhellenic Association of Sports Economists and Managers (PASEM).

Gregory T. Papanikos, President, ATINER.

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Athens Journal of Sports - Volume 9, Issue 3, September 2022 – Pages 127-134

Evaluation of Pre-conflict International Olympic Committee Actions against Russia for Doping Violations

By Raymond Stefani[*]

It is sadly ironic that in ancient Greece, wars were stopped for the Olympics, whereas during the period of the Olympic Truce for the 2022 Beijing Olympics and Paralympics, Russia began an armed incursion into Ukraine. For some time to come, Russia will suffer serious sanctions against competing in the Olympics and in many other international competitions. When Russia is again allowed to compete in the Olympics, there will remain the issue of insuring that the Russian athletes are no longer gaining an advantage by taking performance-enhancing drugs. Although it would seem that the International Olympic Committee (IOC) has been punishing Russia for its past doping transgressions, most of the IOC actions were not sanctions at all, based on the Olympic Charter. However, some previous actions were punitive and could force compliance if reinstituted and increased. The Russian Olympic Committee (ROC) should be disenfranchised. Russian athletes should compete simply as Olympic Athletes with no mention of Russia and no medal table should include Russian-earned medals. The IOC should exercise its ability to screen all Russian athletes for past and present use of performance-enhancing drugs. Further, Russia should not compete in team sports until there is compliance with anti-drug standards.

Keywords: *anti-doping, Russian sports doping, medals stripped, IOC sanctions*

Introduction

In the latter stages of the 2022 Beijing Winter Olympics, medal competitions and background stories had to share media attention with a doping issue regarding a 15-year-old Russian figure skater, Kamila Valieva. She had been expected to be a multiple-medal winner, which seemed to be validated by her high-scoring performance in the team figure skating event. Russia won, under the designation Russian Olympic Committee (ROC) as will be discussed shortly. As is true for all medal winners, she was tested for performance-enhancing drugs. She tested negative. However, one day later, a report was forwarded by a Swedish laboratory, indicating that her sample taken on 25 December 2021 at a Russian competition had tested positive for a banned substance, trimetazidine. That drug is taken by heart patients suffering from angina. The increased blood flow to the heart mitigates angina in legitimate patients, but it also increases stamina and energy output in athletes without heart problems. For example, the well-known Russian tennis player Maria Sharapova was suspended in 2016 for using a similar drug, meldonium, and the world record holding swimmer Sun Yang (China) was caught and suspended in 2014 for using trimetazidine. Many other athletes have tested

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positive for one or the other of those two drugs and have been suspended accordingly.

For Valieva, there followed announced decisions and then appeals to the Court of Arbitration for Sport (CAS) as to what to do with the medals for the team skating competition (Russia remains the winner) and whether to allow Valieva to continue (which was allowed; but she could not take part in any award ceremony if she medalled). Angry discussions for and against the Russian sports system filled news reports in the latter days of the Games. Later, her Olympics ended sadly, probably induced by the disruptive anxiety caused by media coverage, with multiple falls in her last competition, no medal, much anguish and such cold responses from her Russian coaches that the International Olympic Committee (IOC) president, Thomas Bach, admonished that treatment at a press conference.

The purpose of this paper is to provide objectivity to this very sensitive issue. Russia's past doping record will be reviewed along with the IOC actions taken in response. The efficacy of those IOC responses will be evaluated objectively, using the IOC's Olympic Charter policies on competition as well as the resulting medal counts for Russian athletes in six Olympic Games. Having evaluated the efficacy of the stated sanctions, suggestions will be made for meaningful sanctioning, intended to reduce athlete abuse like that suffered by Valieva.

Russian Doping Violations

The official results for each of the past Olympics are available in IOC (2022), including the medal table for each Games. A careful examination of IOC (2022) as well as the World Anti-Doping Association (WADA) website resulted in Wikipedia (2022b), which contains a listing of each medal stripped, summarized by a table giving the total number of medals stripped from each nation.

Based on Wikipedia (2022b), Table 1 shows the total medals stripped from each nation for doping violations since the stripping of the first Olympic medal in 1968 through 15 May 2022. For the purposes of this study, the upper left section of Table 1 shows medals stripped from Russia and the other three designations under which Russia previously competed. Below that are the medals stripped from 10 former constituent Republics of the Soviet Union after the dissolution of the Soviet Union, which was completed in 1991. All other stripped national medals then follow. Russia, competing under its various designations, has been responsible for 47 (30.5%) of all 154 medals stripped. Further, by including the 47 medals stripped from the 10 former Soviet Republics, the total rises to 94 medals, 61% of all.

With historical context, Table 1 provides insight into Cold-War-era doping activity as well as doping activity since the end of the Cold War. Alcohol abuse caused the first medal to be stripped in 1968 in the modern pentathlon. Some anti-doping activity followed through 1988, resulting in the stripping of just 16 of the 154 stripped medals in Table 1. When Ben Johnson of Canada won the 100 m run in 1988 and was famously caught with a steroid infused sample, he lost his medal,

the only medal lost by Canada, which then worked earnestly to stop doping violations.

Anti-doping methods were then dramatically increased after 1988. During the Cold War from 1947 to 1991, Western and Eastern Bloc nations considered success in Olympic and world competitions to be a national priority, at a time when only moderate ani-doping was applied. With the break-up of the Soviet Union in 1991, the former Soviet Republics then began competing under their own flags, thereafter incurring a total loss of the 47 medals mentioned above, indicating that their doping programs most likely began under the just-ended regime of the Soviet Union.

East Germany, competing under various designations, was a successful medal winner during the Cold War, also contested under moderate anti-doping protocols, which resulted in no doping violations. However, when the Berlin Wall came down in 1988, the extent of the East German doping program under Soviet domination became apparent. Ratermiller (2013) notes that the German government reimbursed 167 former athletes for health issues due to doping demands imposed on them under East German rule. Further, it is noted that the files of the former East German secret police, the Stasi, indicated that about 10,000 East German athletes were involved in some form of doping.

Table 1. *Olympic Medals Stripped from Each Country for Doping Violations from 1968 through 15 May 2022*

Country	**G**	**S**	**B**	**Total**		**Country**	**G**	**S**	**B**	**Total**
Russia	13	20	11	44		Spain	3	0	1	4
Olympic Athletes from Russia (OAR)	0	0	1	1		Hungary	2	2	0	4
Soviet Union	0	0	1	1		Romania	1	1	2	4
Unified Team	0	0	1	1		Germany	2	0	1	3
						Great Britain	0	1	2	3
Ukraine	2	4	5	11		Sweden	0	1	2	3
Belarus	2	3	6	11		North Korea	0	1	1	2
Kazakhstan	6	2	2	10		Greece	0	0	2	2
Uzbekistan	2	1	1	4		Bahrain	1	0	0	1
Armenia	0	0	3	3		Canada	1	0	0	1
Moldova	0	0	3	3		Ireland	1	0	0	1
Azerbaijan	0	1	1	2		Jamaica	1	0	0	1
Georgia	0	1	0	1		Poland	1	0	0	1
Lithuania	0	1	0	1		Cuba	0	1	0	1
Kyrgyzstan	0	0	1	1		Finland	0	1	0	1
						Italy	0	1	0	1
United States	5	1	2	8		Mongolia	0	1	0	1
Bulgaria	4	2	1	7		Netherlands	0	0	1	1
Turkey	1	4	0	5		Norway	0	0	1	1
China	3	0	1	4		**Total**	**51**	**50**	**53**	**154**

Clearly, Eastern Bloc nations employed performance-enhancing drugs as a widely used training aid during the Cold War and after. Western bloc nations had far less culpability. Consistently at or near the top of the medal table, the USA has had only eight medals stripped, which is less than for Ukraine, Belarus and Kazakhstan. Other top Western Bloc medal winners have had few medals stripped: Great Britain (3) and Germany (3). China has had only 4 medals stripped. Clearly,

there is a huge gap between other sports powers and Russia as to the use of performance-enhancing drugs.

Additional Russian Doping Violations

Stefani (2017, 2018) contains studies of Russian doping. Wikipedia (2022a) contains a thorough examination of Russian doping transgression and actions taken against Russia, based on an annotated bibliography of 322 references, a truly comprehensive resource on that topic. For example, the Russian Anti-Doping Agency (RUSADA) replaced positive samples with negative ones, delayed sending reports and made reports unavailable to WADA. Russia also restricted WADA's access to athletes, samples and test results, while also failing to report or make available competition dates. Some locations of competitions and athletes subject to random testing were purposely incorrect. In 2016, the WADA-sponsored McLaren report indicated that more than 1000 Russian athletes had been part of a doping coverup. The McLaren report documented many additional doping transgressions.

IOC Actions in Response to Russian Doping Violations

From IOC (2022) and Wikipedia (2022a), IOC actions taken against Russia when doping violations became apparent were located and tabulated as follows. Prior to the 2016 Rio Summer Olympics, the IOC carefully reviewed Russian nominees and refused Olympic status to 111, leaving 282 athletes who competed for Russia. In 2017, the IOC suspended the ROC. For the 2018 Winter Olympics in PyeongChang, the IOC ruled that Russian athletes could not compete under the Russian flag but could compete under the Olympic flag as independent (neutral) athletes, designated Olympic Athletes from Russia (OAR). The 2018 process mirrored what was implemented in 2016: the IOC reviewed the nominated athletes (starting with about 500) eliminated 111, and after further scrutiny, permitted 168 to participate in the Games.

Prior to the 2020 Tokyo Summer Olympics, which would actually be held in 2021, the ROC was reinstated. The Russian athletes were informed they could not compete under the Russian flag, but could compete under the ROC banner and would be designated as ROC in competition, for which 335 athletes were accepted. Athletes could have "Russia" shown on their uniforms and some use of the Russian colors on their unforms was allowed, Wikipedia (2022a). For the 2022 Beijing Winter Olympics, the exact same competitive conditions as in 2021 were imposed on Russia. A total of 211 athletes from Russia were approved by the IOC to compete.

Evaluation of IOC Actions

The official IOC rules of competition and the resulting medals earned will now be reviewed to objectively evaluate the strength of the above actions and to determine which actions could be called sanctions and which were not.

The Olympic Charter governs the Olympic movement and competition in the Olympic Games, IOC (2017). Rule 6 is titled Olympic Games and reads as follows. "The Olympic Games are competitions between athletes in individual or team events and not between countries. They bring together the athletes selected by their respective NOCs whose entries have been accepted by the IOC. They compete under the technical direction of the IFs concerned." The abbreviation IF refers to the International Federation that governs each sport contested.

Since athletes do not compete for their country under Rule 6, it was not a sanction to tell Russia that their athletes could not compete under their flag and could not play the Russian anthem for gold medal winners. Those were simply elements of pageantry that had no connection with the actual conduct of the Games. Further, when Russia competed as the ROC in 2021 and 2022, those were not sanctions since all athletes compete for their NOCs, under Rule 6.

Table 2. *Russian Athletes' Olympic Medals for 2012-2022, Taken from IOC (2022)*

Year	Location	IOC Designation For Russian Athletes	Athletes	Total Medal Position	Total Medals	G	S	B
Summer Olympics								
2012	London	Russian Federation	436	3	82	24	26	32
2016	Rio	Russian Federation	282	4	56	19	17	20
2021	Tokyo	ROC	335	3	71	20	28	23
Winter Olympics								
2014	Sochi	Russian Federation	232	1	29	11	9	9
2018	PyeongChang	OAR	168	7	17	2	6	9
2022	Beijing	ROC	211	2	32	6	12	14

In 2016 and 2018, the act of denying participation to hundreds of Russian athletes in those games does indicate sanctioning under Rule 6. The effect of the reduction of athletes in 2016 and 2018 may been seen in Table 2, which shows the medal count for Russian athletes at the last three summer and last three winter Games. The data is taken directly from the IOC website, where the IOC refers to Russia as the Russian Federation in 2012, 2014 and 2016. When athlete entries dropped in 2016 versus 2012 and in 2018 versus 2014, total medal count and ranking position based on total medal count became worse. As total athlete entries increased in 2021 versus 2016 and in 2022 versus 2018, total medal count and ranking position improved and returned to values close to those in 2012 and 2014,

respectively. Indeed, strongly reducing the number of Russian athletes had an obvious negative effect on medal count and ranking position as viewed by the public, looking at the medal table, therefore those actions of 2016 and 2018 were significant sanctions. The denied entries were for athletes that committed doping violations.

Since athletes compete for their NOCs according to Rule 6 of the Olympic Charter, it follows that the IOC considers the medal table to be those earned by the NOCs. Since the IOC used OAR to signify Russian athletes in their 2018 table and since those medals were tabulated versus all other NOCs, therefore the IOC considered the OAR to be the same as an NOC. That is, Russia was not forced to act as an independent or neutral nation, therefore competing as OAR was not a sanction in itself. On the other hand, since the IOC dealt directly with the OAR, the IOC could more easily contact and test Russian athletes than if the IOC had to work though the ROC.

Conclusions

When sanctions due to Russia's invasion of Ukraine have been completed, based on the discussion above, the following actions would provide the most meaningful sanctions to force Russia to comply with appropriate doping controls.

The IOC should begin by placing the ROC on suspension as was done in 2018. The Russians who wish to compete in the Olympics after being nominated by their sports' International Federations should do so under a banner such as Olympic Athletes (OA), but with no mention of Russia. Each athlete should undergo significant drug testing both while in competition and via random out-of-competition testing, which would be much easier to perform, not having to deal with the ROC. Further, to truly compete under a non-ROC banner as independent and neutral athletes, the IOC should not include any medals won by the OA in a medal table, since they would not be competing for an NOC. Since the IOC has exerted copyright control over event results in the past, the IOC can order news media to exclude OA medals from any medal table. Further, to act as independent and neutral athletes, the OA should not be allowed to compete in team events at the Winter Olympics such as curling, ice hockey and four-person bobsled and not to compete in team events at the Summer Olympics such as basketball, handball, rugby sevens, volleyball and water polo. Similarly, Russian competition in relay events and in events where individual performances are numerically combined into team scores should not be allowed. The above anti-doping sanctions should remain until the IOC decides that proper anti-doping controls are in place and are being properly utilized.

These actions would dramatically reduce the abuse of athletes like Kamila Valieva. A reduction in the systemic use of performance-enhancing drugs can also eliminate long-term physical ailments as was seen after the reunification of Germany, due to the many former East German athletes who had previously been involved in doping.

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Athens Journal of Sports - Volume 9, Issue 3, September 2022 – Pages 135-160

Crowdfunding as Financing Tool of Semi-professional Sports Clubs: Evidence on Funders' Preferences and Typologies

By Christopher Huth[*] & Markus Kurscheidt[±]

Due to the official regulatory credit screening procedures of Basel II and Basel III in Europe, credit is now more difficult to obtain. As a consequence, alternative financial mechanisms, such as crowdfunding, that focus on sports clubs' supporters have become more important. The aim of the present study is to evaluate crowdfunding related to sports clubs using a choice-based conjoint analysis (CBCA) to detect project- and participant-related success factors in successful financing. Therefore, two fictitious crowdfunding projects with the offered return and the price are chosen as features and two German sports clubs – one ice hockey club and one football club – are selected for the analysis. Using segmentation techniques, the study also examines the types of crowdfunders and their preferences. The results show that the offered return and the price are the two most important features for potential crowdfunders. They prefer either a club-related return containing a certain economic value or the donation as representative of a more altruistic return. The findings also indicate that crowdfunding can be a financial instrument for both semi-professional and professional clubs.

Keywords: *crowdfunding, financial instrument, sports clubs, semi-professional clubs, professional clubs*

Introduction

In general, semi-professional and professional sports clubs are searching for alternative financial mechanisms to fund their various activities. Despite their popularity, sports clubs – both amateur (Breuer and Wicker 2009) and professional (Storm and Nielsen 2012) – face many financial challenges in today's economic environment. The economic situation is particularly tense in European football, as demonstrated by Hamil and Walters (2010) for English clubs and by both Boscá et al. (2008) and García and Rodríguez (2003) for Spanish clubs. Paradoxically, football's financial crisis of loss-making coincided with dramatic increases in revenue in the sport (Lago et al. 2006). The problem originates in the imbalance between income and expenditures, which has led to rising debt (Barajas and Rodríguez 2013, Müller et al. 2012).

To raise new funds, some highly capitalized European football clubs have undertaken initial public offerings (IPOs; Benkraiem et al. 2011). In addition, twelve different German football clubs have issued so-called fan bonds since 2004 (Huth 2014). In addition to institutional investors, both of these fund-raising

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mechanisms focus on the club's target group – supporters. Previous studies underline that fans of sports clubs act altruistically and that precarious financial circumstances can even make fans more likely to invest in order to support their clubs (e.g., Huth et al. 2014, Schwendowius 2002). Additionally, traditional investment objectives are more or less irrelevant for supporter-involved financial instruments (Huth 2020). Therefore, alternatively, crowdfunding – which also focuses primarily on fans or supporters – might be a useful supporter-oriented financial mechanism for sports clubs. Crowdfunding began in private culture and in the creative economy (Martinez-Cañas et al. 2012) and is primarily employed to finance movie and music projects. However, crowdfunding is also used today to fund projects in the non-profit sector and private-sector start-ups (Meinshausen et al. 2012). Recently, crowdfunding has made its entrance into the sports world (Novak 2017). The Jamaican bobsleigh team used crowdfunding to collect USD 129,687 to compete in the Sochi 2014 Winter Olympic Games (Crowdtilt 2014). Especially International Olympic Sport Federations with less funding had a significantly more innovative approach so that crowdfunding projects were implemented in their sport, but mostly at individual and local levels (Crespo et al. 2022).

Therefore, the present study evaluates crowdfunding related to sports clubs using a choice-based conjoint analysis (CBCA) to detect project- and participant-related success factors in successful financing. Using segmentation techniques, the study also examines the types of crowdfunders and their preferences. Additionally, the study discusses whether crowdfunding has the potential to be an effective financial mechanism for funding both semi-professional and professional sports clubs by comparing crowdfunding with existing supporter-oriented financial mechanisms (such as IPOs and fan bonds) to detect potential advantages and disadvantages.

This paper broadens the literature considerably. In general, previous published studies that have focused on crowdfunding in sports are rare. To date, economic-related crowdfunding studies have primarily concentrated on crowdfunding in other sectors. However, focusing on financing naming rights of sport stadia through crowdfunding Huth (2018a, 2018b) shows that participants who identify with the project are generally the most willing to participate in a crowdfunding project and that crowdfunding can actually be seen as a supporter-based instrument that is an alternative to existing sport facility naming rights models. However, a better understanding of crowdfunding is necessary for it to develop into a more useful financial mechanism for sports clubs – far from stadium naming rights in professional sports. In particular, ambitious semi-professional sports clubs rely on alternative financial mechanisms because they do not have the financial and administrative resources to undertake an IPO or issue bonds on the capital markets because of the associated transparency and publicity requirements. Therefore, the aim of this study is to illuminate whether and how sports clubs can use crowdfunding and to identify key success factors related to crowdfunding. In this context, it is important to know how to detect project- and participant-related success factors and to examine the types of crowdfunders and their preferences. For this, two ambitious semi-professional sports clubs are considered in the present

analysis. However, the aim is that the results also yield practical implications for professional clubs.

This paper is structured as follows. After the introduction including the aims of the paper, the is a short review of previous research on the funding of sports clubs, the role of crowdfunding in corporate finance and investors' behaviour in the context of both sports clubs and crowdfunding. The method used in this study is presented in detail in the section that follows, and the analytical results come after. The next section interprets the results and highlights their implications. Finally, the paper ends with a short conclusion highlighting the limitations of this study and proposals for further research.

Literature Review

Understanding the traditional model of the yield-oriented homo oeconomicus is the first step to explain investors' behaviour. A model extension is so-called Behavioural Economics. This model expands the neoclassical theory to include the psychological and behaviour-oriented aspects of investors. In sports, investments are driven primarily by emotional motives instead of financial objectives (Gorman et al. 1994, Korthals 2005). Using fan bonds, Huth et al. (2014) provide empirical evidence of the importance of emotional motives in sports investments. They show that fan investors primarily aim to support their club and that maximizing returns and minimizing financial risk are less important objectives. Another study has identified the success factors of a bond issue from the club's perspective, and its results indicate that supplying decorative certificates and a reasonable denomination (from €100 and higher) are essential to securing the participation of a large number of supporters (Huth 2014). Other studies have found that decorative certificates, which can be understood as sports merchandise, support participants' investment behaviour (Hopt 1991, Rohlmann 2000, Schiereck and Wolfenstetter 2011). Optiz (2003) shows that shareholders of football clubs have few shares per capita and concludes that financial motives are less important. In addition, Weimar and Fox (2012) and Optiz (2003) demonstrate that the investment decision is made independent of the club's financial situation. As mentioned before, Schwendowius (2002) supposes that sports investors act altruistically so that their investment resembles a donation more than an investment. Sports clubs' precarious financial circumstances can even make *fanvestors* more likely to invest in order to support their clubs (Huth et al. 2014), and supporter loyalty makes the club more or less a supply monopolist (Szymanski and Kuypers 2000, Frampton et al. 2001). In the context of crowdfunding and naming rights, findings indicate that the most involved participants who support traditional values in sports are the most willing to participate in a crowdfunding project (Huth 2018b). However, Huth (2018b) indicates that the sums that can be generated through crowdfunding are limited.

Focusing on the financial instruments that are used by sport clubs, credit has been the primary means of financing (Keller 2006). Of course, due to the official regulatory credit screening procedures of Basel II and Basel III in Europe, credit is now more difficult to obtain (Ehrmann 2012, Müller et al. 2006, Keller 2006, Kern

2007). As a consequence, alternative financial mechanisms that focus on sports clubs' supporters have become more important in recent years (Ernst & Young 2009, Leki 2004). Thus, the supporter is considered to be not only a fan of the club but also a potential investor. IPOs and issues of participation certificates or bonds are the typical means of engaging in supporter-oriented financing. IPOs involve equity financing and allow the investor to obtain a share of the club's profits and to have voting rights (Gramatke 2003, Suciu-Sibianu 2004). IPOs do not only provide an immediate injection of capital for sports clubs but they can also allow access to capital markets in the future (Gerrard 2009). Previous research has shown that the financial performance of football clubs, on average, did not improve following an IPO (Baur and McKeating 2011). Meanwhile, numerous football clubs have delisted due to liquidity problems and excessive share price volatility (Benkraien et al. 2011) which is influenced primarily by significant match results (Dobson and Goddard 2002, Morrow 1999). Participation certificates are loan capital and guarantee a mostly fixed financial return without any voting rights (Dworak 2010, Keller 2006). In sports, bonds are often called fan bonds (Gros and Huth 2013, Hasler 2013). Typically, sports clubs issuing fan bonds do not attempt to attract the attention of institutional investors and instead focus on supporters as investors.

An alternative to supporter-oriented financial mechanisms is crowdfunding. The origin of crowdfunding is related to the term crowdsourcing, which describes the phenomenon of the outsourcing of company-relevant tasks to a wide, external crowd by a public call (Howe 2009). Crowdsourcing assumes that a large group generates higher value based on aggregated possibilities (Howe 2009), and the internet has been an important catalyst for this development (Brabham 2008, Wojciechowski 2009). A special form of crowdsourcing is crowdfunding ("crowd" and "funding"). Crowdfunding can be used to generate financial resources for earmarked projects. Customers thus act not only as consumers but also as investors and are integrated into the value chain accordingly (Kleemann et al. 2008, Ordanini et al. 2011). The supporter of a given project receives a return – whether monetary or non-monetary – as a result of their investment (Mollick 2013). Companies' central motive to engage in crowdfunding is capital allocation, which is mostly a supplement to other financial instruments (Belleflamme et al. 2010, Belleflamme et al. 2013). Current practice demonstrates that only limited sums can be raised by crowdfunding and that projects with lower target sums have been most successful in the past (Mollick 2012). Increasing the clubs' prominence is another motive of the initiators (Lambert and Schwienbacher 2010); especially when the company and their products are not well-known in the market. Attaining indirect feedback and customers' preferences regarding their own products or services is another advantage (Belleflamme et al. 2010, Lambert and Schwienbacher 2010, Schwienbacher and Larralde 2010). From a financial and administrative perspective, the risk of the loss of corporate control is reduced by crowdfunding (Gerber and Hui 2013).

Participants in crowdfunding projects are likely to have diverse motives. Iyer et al. (2009) demonstrate that participants consider hard financial facts to evaluate a project, and their actions are comparable to common banks or venture capital

firms. Attractive rewards or returns (Gerber et al. 2012, Lambert and Schwienbacher 2010) and the social and intrinsic motives of participants (Lambert and Schwienbacher 2010) are also considered in their decision-making processes. Ordanini et al. (2011) underline the great relevance of identifying with the project or the project initiator. Guo (2011), Gerber et al. (2012) and Gerber and Hui (2013) confirm these findings and add that the pleasure of helping and social perception are also relevant. In light of supporters' altruistic motives, crowdfunding would seem to fit non-profit projects better (Brady et al. 2002), which can be explained by the higher integrity of these projects due to the absence of the pursuit of profits (Belleflamme et al. 2010, Lehner 2013). Additionally, the influence of peers (herding behaviour) is an important factor for participants (Herzenstein et al. 2010, Zhang and Liu 2012). Finally, the probability of participation depends on socio-demographic features of both the initiator (Pope and Sydnor 2008) and the participant (Herzenstein et al. 2008). In summary, investors' behaviour in crowdfunding is noticeably similar to investors' behaviour in the sports-related literature, which leads to the hypothesis that crowdfunding might be a suitable alternative to the financial mechanisms currently used for sports club financing.

Methodology, Research Design and Data Analysis

CBCA was selected for the empirical evaluation undertaken in this study. In general, conjoint analyses are used to identify individuals' willingness to pay. The participants are directly asked not about the price but about their preferences with respect to products or services. The quality of the results depends on the choice of an adapted conjoint procedure (Green et al. 1993). The most common methods are traditional conjoint analysis (TCA), adaptive conjoint analysis (ACA) and CBCA (Sattler and Hartmann 2008, Wittink et al. 1992a).

After initial attempts were made to conduct conjoint analysis in the 1920s (Green and Srinivasan 1978), studies by Debreu (1960) and Luce and Tukey (1964) led to the origin of TCA. ACA, which can be traced back to the work of Johnson (1987), is an improvement on TCA that integrates more attributes and features (Hillig 2006). ACA is a hybrid conjoint procedure that combines compositional and decompositional approaches (Green et al. 1981). CBCA expands TCA with a different selection situation and the non-choice option. McFadden's (1981) discrete choice approach forms the basis for the conception of CBCA by Louvriere and Woodworth (1983). Due to the non-option, CBCA is best suited for simulating real purchase decisions (Balderjahn et al. 2009). However, CBCA has weaknesses in the individual analysis and, as a result, limited possibilities with market segmentation (Backhaus et al. 2011). However, following the development of the latent-class approach and the hierarchical Bayes method, this disadvantage has been overcome (Gensler 2006, Völckner et al. 2008). Therefore, CBCA can be understood as an appropriate approach to measure the willingness to pay (Orme 2013) and to segment the market (Wittink and Cattin 1989, Wittink et al. 1992b). For market segmentation, CBCA forms different groups with different needs and perceptions (Desapro et al. 1995). Market

segmentation can be divided into a priori and a posteriori segmentation, in which the a priori segmentation does not guarantee that the clusters formed have homogenous utility structures or differ from one another significantly (Green and Krieger 1991, Moore 1980). The a posteriori segmentation forms clusters with a homogenous utility structure (Haley 1984, Wind 1978) and integrates socio-demographic factors to characterize the identified segments.

In the following, the objects of inquiry – two semi-professional German sports clubs – are presented. Then, the research design and the questionnaire, including data collection, are presented. The research design focuses on issues concerning CBCA's features and characteristics, the composition of selection situations, the determination of the choice design, the chosen method of analysis and the disaggregation of utility values.

Objects of Inquiry

Two German sports clubs – one ice hockey club and one football club – were selected for this evaluation and to generate an appropriate sample size. The football club plays in the fourth-highest ranked football league, whereas the ice hockey club is located in the third-highest hockey league. Therefore, both clubs can be classified as semi-professional and cover both amateur and professional clubs to a certain degree. The clubs were selected because they have long histories – including in higher and more professional leagues – and have ambitions to move up in league in the coming years. Both clubs are leaders in their region and are important pillars in their leagues. Their current league levels may not last because their brand and location have the potential to move up over the medium to long term. The football club has 650 members and four different supporter clubs. Home matches have 1,300 spectators per game, on average. The ice hockey club has 243 members, four supporter clubs and an average per-game attendance of 1,600 spectators. The clubs are similar to one another to avoid any mismatch between the two.

The clubs were also selected because the demand for alternative financing mechanisms is much higher for minor league clubs, as they do not have the opportunity to generate high sponsor revenues or issue bonds. Therefore, a modern and novel approach to financing sports clubs plays an important role not only for highly capitalized professional sports clubs but also for ambitious semi-professional clubs.

CBCA's Features and Attributes

Relevant features and attributes were specified to construct the CBCA's design. These features are the basis for the fictitious crowdfunding projects. Several requirements were considered regarding the choice of features and attributes. From the club's perspective, the features must be independent, influenceable and realizable. The potential crowdfunders' features and attributes must be easily understandable and relevant to their preferences. On the model level, they should

be in a compensatory relation in order to form preferences independently and not as a criterion for exclusion (Weiber and Mülhaus 2009).

For the present study, the project, the offered return and the price were chosen as features. A non-profit and a commercial project were selected for the fictive projects. Considering the findings of Brady et al. (2002), the non-profit project tested whether crowdfunding also fits non-profit projects in sports better or whether an orientation towards professional activities is dominant. The non-profit project consisted of supporting clubs' youth work. The commercial project focused on the financial support of clubs' professional squad. On the basis of the first fifteen most successful projects of the German sports crowdfunding platform fairplaid.org, the returns offered and the price brackets were derived from the previous decision-making behaviour of crowdfunders. As discussed above, attractive returns are crucial for successful crowdfunding projects (Gerber et al. 2012, Lambert and Schwienbacher 2010). The returns offered included a VIP ticket for a home game of the professional squad, being mentioned as a crowdfunder on the club's homepage and Facebook site and an Amazon voucher worth €15. The fourth alternative is the donation, i.e., no return, to consider the purely altruistic behaviour of sports fans (Huth et al. 2014, Schwendowius 2002, Storm and Nielsen 2012). The three other returns cover a monetary-focused return (voucher), a club-focused return (VIP-ticket) and a return that focuses on the social perception of the potential crowdfunder (public acknowledgement). Therefore, the offered returns cover a wide range of possible reasons for participation. Six different prices were used for the price feature. In line with Mollick (2012), the analysis of the fairplaid.org projects demonstrated that successful projects had many small monetary contributions. Only 4.86% of the fairplaid.org crowdfunders were willing to pay more than €50. Therefore, €50 is the highest sum, and the other five price brackets are €5, €10, €20, €30 and €40. Table 1 summarizes the chosen items.

Table 1. *Selected Features and Their Attributes*

Feature	Attribute	Description
Project	Commercial project	Support of the professional squad
	Non-profit project	Support of clubs' youth work
Price	5 euro	Considered price brackets
	10 euros	
	20 euros	
	30 euros	
	40 euros	
	50 euros	
Offered return	VIP ticket	VIP ticket for a home match
	Mention	Mention on club's homepage and social media channels
	Amazon	Amazon voucher worth 15€
	Donation	Donation without any return

Composition of the Selection Situations

In total, three features with two, four and six attributes were selected; thus, 48 different stimuli can be created by combining the attributes. A complete factorial design was selected to obtain optimal estimation quality (Backhaus et al. 2013). However, a high number of stimuli can cause fatigue (Sattler and Hartmann 2008). In the present study, the participants received three stimuli or the non-choice option per selection situation, leading to 16 decisions in total. A fixed-choice task or a hold-out task was included to validate the forecast validity. This task was presented to each participant without including it in the real analysis (Gensler 2006). Using the number of choice sets and Johnson's rule, the appropriate sample size was a minimum of 250 participants (Orme 2013).

Determination of the Choice Design

For the study's choice of design, the quality criteria included orthogonality, level balance, minimal overlap, and utility balance (Huber and Zwerina 1996). A complete factorial design automatically fulfils the quality criteria of orthogonality. The level balance indicates that all feature characteristics are used equally often in the choice set (Hensher et al. 2005). Otherwise, a number of level effects occur (Currim et al. 1981, Steenkamp and Wittink 1994). In the present study, the price feature was comprised of more characteristics than the other features so that the level effect had to be considered. The quality criteria of minimal overlap means that an attribute is not used several times within a choice task (Eggers and Sattler 2011). However, the feature project had only two characteristics so that overlaps could not be eliminated. To avoid overlaps in other features, an orthogonal design for the 48 stimuli was identified by SPSS. The quality criteria of the utility balance means that the stimuli of a choice set should have similar utility values and have no dominant stimuli (Huber and Zwerina 1996). Therefore, the aim was to generate balanced choice situations via shifting. The efficiency was verified by the D-efficiency (Kuhfeld 1997, Kuhfeld 2010), which was 100 in the present study, which indicates that the choice design was maximally efficient.

Analysis Method

The configuration of the analysis method consisted of the specification of a benefit model and a choice model to explain participants' behaviour. On the basis of these behavioural models, the partial, individual benefits were mathematically estimated (Backhaus et al. 2013). An additive or a compensatory partial individual benefit model was used (Figure 1).

Figure 1. *Used Additive Part-worth Utility Model with Features as Binary Variables*

$$u_{kr} = \sum_{j=1}^{J} \sum_{m=1}^{M_j} b_{jm} \times x_{jkmr}$$

u_{kr}: utility of alternative k in selection situation r
b_{jm}: part utility of attribute m of feature j
x_{jkmr}: 1 if alternative k has in situation r the attribute m regarding feature j; 0, otherwise

Source: Backhaus et al. 2013, p. 187.

Next, the price was displayed by the part-worth model to calculate relative importance. However, price is a quantitative feature. Therefore, the utility of the price was displayed in the second figure by a vector model to identify the willingness to pay and to calculate more exact generic price coefficients.

Figure 2. *Used Additive Part-value Utility Model with Price as a Metric Variable*

$$u_{kr} = \sum_{j=1}^{J} \sum_{m=1}^{M_j} b_{jk} \times x_j + b \times P_{kr}$$

u_{kr}: utility of alternative k in selection situation r
x_j: 1 for j = k; otherwise 0
b: benefit impact of the price (price coefficient)
P_{kr}: price of alternative k in selection situation r

Source: Backhaus et al. 2013, p. 246.

The price coefficient b indicates the utility change in terms of one unit of the price. It is assumed that utility decreases with higher prices. Under this assumption, the calculated price coefficients are $b < 0$ (Backhaus et al. 2013).

The choice model describes the probability that a person decides on the basis of the perceived utility for a given alternative. Using CBCA, the logit choice model was considered. In the present study, there are more than two alternatives of one-choice situations. Therefore, the logit choice model was expanded to the multinomial logit choice model (Backhaus et al. 2013).

Figure 3. *Multinomial Logit Choice Model of CBCA*

$$prob_i(k|k' \in CS) = \frac{e^{\beta_i \times u_{ik}}}{\sum_{k \in CS} e^{\beta_i \times u_{ik}}} = \frac{1}{1 + \sum_{k' \neq k \in CS} e^{-\beta_i \times [u_{ik} \div u_{ik'}]}}$$

u_{ik}: utility of alternative k of person i
β_i: rationality parameter

Source: Backhaus et al. 2013, p. 190.

Selection probability was determined by the differences and not by the absolute amount of the utility of the alternatives. The alternative's selection probability depends on the utility of all alternatives in a choice situation. The differences between the utility values were quantified by the rationality parameter ß. A ß of 1 was used because ß is not to quantify (Backhaus et al. 2013). The utility of the price was displayed by the Price-logit model to calculate the willingness to pay (Figure 4).

Figure 4. *Price Logit Model of CBCA*

$$prob_i(k|k' \in CS) = \frac{e^{u_k}}{\sum_{k \in CS} e^{u_{k'}}} = \frac{e^{a_k + b \times P_k}}{1 + \sum_{k' \in CS} e^{a_{k'} + b \times P_{k'}}}$$

u_{kr}: utility of alternative k
a_k: 1 if j = k; 0, otherwise
b: benefit impact of price (price coefficient)
P_{kr}: price of alternative k

Source: Backhaus et al. 2013, p. 247.

Finally, the issue was to identify plausible part values to explain the choices as well as possible. To do so, the probability of a chosen alternative had to be as large as possible, which was achieved by maximizing the log-likelihood function in Figure 5 (Backhaus et al. 2013, Gensler 2006).

Figure 5. *Log-likelihood Function for Estimating Utility Values*

$$LL = \sum_{j=1}^{J} \sum_{k=1}^{K} ln[prob_r(k)] \times d_{kr} \rightarrow max!$$

d_{kr}: d_{kr} =1, when alternative k was chosen in situation r; 0, otherwise

Source: Backhaus et al. 2013, p. 195.

A value of more or less 0 indicates a choice probability of more or less 1. The determination of the maximum of the log-likelihood function was conducted by an iterative algorithm. The Microsoft Excel solver was used for the maximum likelihood estimation. The solver uses the Generalized Reduced Gradient algorithm. Controlling the results, the COXREG procedure of the SPSS Statistics 22 statistics program was used. The Cox regressions use the same model and calculate identical results (Backhaus et al. 2013).

The criteria of goodness of fit and forecast validity were used to control the quality of the utility values. Goodness of fit is verified by the likelihood ratio test and the Wald test if the utility values reflect the choice situation. In addition, goodness of fit was verified by the hit rate. The hit rate should be over 25%, which is the hit ratio of a random choice. The forecast validity indicates whether the utility values are suitable for predicting the choice of the hold-out task, measured by the hit rate of the hold-out task (Backhaus et al. 2013, Gensler 2006).

Disaggregation of the Utility Values

Utility values on an aggregated level have only limited validity. Therefore, utility values must be calculated on a disaggregated level. The latent class approach and the hierarchical Bayes method are available for a posteriori segmentation. Using a complete factorial design, the hierarchical Bayes approach was selected. The calculation of the individual utility values by the hierarchical Bayes method was conducted using the conjoint analysis module of the statistical software XLSTAT. Then, a cluster centre analysis on the basis of the calculated individual utility values without using the utility values of the none option was executed with the Ward method of SPSS (Decker and Bornemeyer 2009). The elbow criteria and a dendrogram were considered to identify the optimal number of clusters (Backhaus et al. 2013). The final allocation of the participants for the different segments was made by cluster centre analysis. The means of the 3-cluster solution in the hierarchical cluster analysis were used as starting values. A stable segmentation is achieved if no differences can be identified between the hierarchical cluster analysis and the cluster centre analysis (Müller 2004). Cohen's Kappa coefficient was used to validate the allocation of the participants (Bortz 1993, Eckey et al. 2002). Finally, segment-specific utility values plus socio-demographic and psychographic data can be used to characterize the identified segments.

Questionnaire

An online questionnaire was developed for cost reasons and easier production (Wright 2005). The internet does not guarantee a complete representation of all age classes. However, in this context, it seems to be the appropriate tool because crowdfunding is associated with and is popular on internet platforms, in particular. The online survey software Qualtrics was used for the implementation.

The questionnaire consisted of four parts. First, the participants were filtered by the two clubs so that questions about the other club could be skipped and the duration of the survey duration reduced. Second, participants' sporting affinity, relationship to the chosen club and attitudes as spectators were analysed via 5-point Likert scales (from 1 = do not agree to 5 = fully agree) to assess their attitude (Jones 2015, Revilla et al. 2014). In addition, they declared how many home and away matches of the club they attended per season and whether they were season ticket holders, fan-club members, club members and/or club sponsors. The aim of these questions was to understand the relationship between the participants and the clubs. As mentioned above, identification with the initiator of crowdfunding projects – here, the clubs – is highly relevant (Ordanini et al. 2011). In the third part – the survey's central part – two fictive crowdfunding projects were presented. Afterwards, the randomized CBCA was conducted. Here, the process was intensively explained to minimize the risk that the participants dropped out of the survey early. The socio-demographic data of the respondents were collected in the final part.

A pre-test with 20 participants was conducted to test the questionnaire to examine the questionnaire for comprehensibility, the effect of fatigue and balance of the choice tasks. The pre-test illustrated that the quality criteria of the balance of the choice tasks was compliant.

The survey was conducted from 17.02.2014 until 17.04.2014 via the internet. The link was posted on clubs' homepages, on social media – Facebook and Twitter – and on the clubs' fan pages. In total, 384 questionnaires were initiated, and 251 were completely filled out and used in the analysis.

Results

The mean age of the participants was 33 years (Table 2). Participants earned a net household income between 1,000 and 2,000 euros. In the sample, 83.60% of the participants were male. Club-oriented characteristics were measured by 5-point Likert scales, and these showed that participants were highly interested in sports and that they identified with their club. A quarter of the participants were season ticket holders, and one-fifth were members of one of the two clubs. In summary, the vast majority of participants were involved in the club. Finally, the median of the measured distance indicates that the participants were primarily from urban areas.

Table 2. *Descriptive Statistics of the Sample*

	Total sample
Participants	251 (100%)
General interest in sports	MV*: 4.65 SD**: 0.563
Interest in preferred sport	MV: 4.71 SD: 0.646
Identification with the club	MV: 4.03 SD: 1.115
Feeling of being part of the club	MV: 3.35 SD: 1.205
True supporter of the club	MV: 3.84 SD: 1.344
Attendance home matches	MV***: 3.67 SD: 1.497
Attendance away matches	MV***: 2.27 SD: 1.232
Other characteristics	Season ticket: 25.5% Fan-club: 12.35% Member: 19.52% Sponsor: 2.39%
Sex	male: 83.60% female: 16.40%
Age	MV: 33.00 years SD: 10.176 years

Net household income	MV***: 3.29 SD: 1.502
Distance (home/stadium)	MV: 24.21 km Median: 0,00 km SD: 61.173 km

*MV≙ mean value **SD≙ standard deviation *** 5-point Likert scale

Estimation of the Part Values on Aggregate Level

The analysis begins with the part values and the relative importance of the entire sample. The model indicates a high statistical significance (p-value $\alpha < 0.05$), which indicates that the null hypothesis is rejected. The hit rate is 35.76%, and the hit rate of the hold-out-task is 29.88%. With the exception of the 40-euro category, all coefficients are highly significant. The utility is represented in centre and off-centre forms (Table 3). The last attribute of a feature is used as a null category for the off-centre form to embed the part values. By using the calculated part values, the relative importance of the features is calculated as the difference between the highest and smallest part values of a feature.

Table 3. *Estimation of the Part Utility Values of the Entire Sample*

Feature	Attribute	Part value	Centred	Range	Relative importance
Project	Commercial project	-0.262	-0.131	0.262	14.65%
	Non-profit project	0.000	0.131		
Price	5 euros	0.812	0.337	0.812	45.45%
	10 euros	0.797	0.322		
	20 euros	0.657	0.183		
	30 euros	0.433	-0.042		
	40 euros	0.150	-0.324		
	50 euros	0.000	-0.475		
Offered return	VIP ticket	0.350	0.385	0.713	39.91%
	Mention on homepage/Facebook	-0.363	-0.328		
	Amazon voucher	-0.128	-0.093		
	Donation	0.000	0.035		
Non-alternative		0.446	0.137		
Price coefficient b		*-0.019*			

The calculated part utility values indicate that the price is the most important feature, followed by the offered return and the project. In terms of the project feature, the non-profit youth project ranks higher than the commercial project. The VIP ticket and the donation are preferred as returns. The Amazon voucher and the mention on the club's homepage and social media channels have negative utility values. The price coefficient of b = -0.019 indicates that lower prices increase the utility.

Segmentation of the Sample and Their Specific Part Values

The elbow criterion and the dendrogram identify three clusters. The segments formed are more or less equally large: The first segment is 32.27%, the second segment is 27.09%, and the third segment is 40.46%. The identified cluster affiliation of the participants by the cluster centre analysis is only slightly different from the cluster affiliation of the hierarchical cluster analysis. The high correlation of the identified cluster affiliations is confirmed by a Cohen's Kappa coefficient of 0.810, and the three cluster solutions are thus considered stable.

Next, the likelihood-ratio test or the Wald test and the hit rate are used to calculate segment-specific part values. The null hypothesis is rejected for all segments, indicating that all segments are highly significant. Furthermore, in segment 1, the hit-rate constitutes 43.98% of the value, and the hold-out task, 43.21% of the value. In the second segment, the hit rate is 53.68%, and the hold-out-task is 57.35%. In the third segment, the hit rate is 38.05%, and the hold-out task is 37.25%. The quality control of segment 1 shows that all coefficients are highly significant. In the second segment, all coefficients are highly significant, with the exception of the project feature. The coefficients of segment 3 are also highly significant with the exception of the 30 and 40 euro categories Table 4 illustrates the segment-specific part values in centre form.

Table 4. *Comparison of Utility Values of the Entire Sample and the Three Segments*

	Total sample	**Segment 1**	**Segment 2**	**Segment 3**
Project				
Commercial project	-0.131	-0.328	0.030	-0.105
Non-profit project	0.131	0.328	-0.030	0.105
Price				
5 euros	0.337	0.573	2.424	-0.611
10 euros	0.322	0.557	2.010	-0.088
20 euros	0.183	0.280	0.645	0.004
30 euros	-0.042	-0.006	-0.403	0.160
40 euros	-0.324	-0.538	-1.586	0.217
50 euros	-0.475	-0.867	-3.092	0.319
Offered return				
VIP ticket	0.385	0.571	1.080	0.275
Mention on homepage/Facebook	-0.328	-0.606	-0.752	-0.035
Amazon voucher	-0.093	0.194	0.982	-0.752
Donation	0.035	-0.159	-1.311	0.512
Non-alternative	0.137	-0.017	1.093	-0.005
Price coefficient b	*-0.019*	*-0.033*	*-0.116*	*0.015*

Price remains the most important feature in the first segment (see also Table 5). The second segment's price importance is even higher. The higher negative b-value of segment 2 indicates that it is more price sensitive than the two other segments. In the third segment, the return offered is the most import feature. The positive price coefficient of segment 3 indicates that raising prices increases the utility. However, it expected that the utility value of segment 3 will decrease when

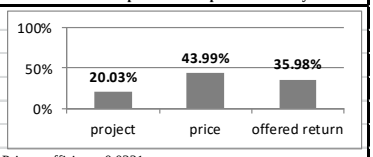
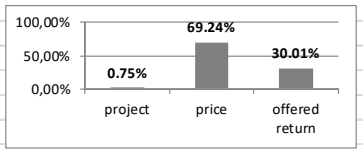
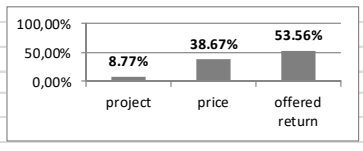
a certain amount is exceeded. Only the maximum willingness to pay in segments 1 and 2 can be calculated (Table 5). The maximum willingness to pay is achieved when the sum of the part values of a stimulus is less than or equal to the utility of the none option.

Table 5. *Comparison of the Maximum Willingness to Pay of the Entire Sample and the Different Segments*

Total Sample	VIP-ticket	Mention	Voucher	Donation
Commercial project	32.20 €	-5.30 €	7.14 €	13.63 €
Non-profit project	46.03 €	8.53 €	20.97 €	27.46 €
Segment 1	VIP-ticket	Mention	Voucher	Donation
Commercial project	34.30 €	-1.59 €	22.73 €	11.56 €
Non-profit project	54.20 €	18.31 €	42.63 €	31.46 €
Segment 2	VIP-ticket	Mention	Voucher	Donation
Commercial project	26.17 €	10.76 €	25.25 €	6.03 €
Non-profit project	25.61 €	10.19 €	24.68 €	5.46 €

Finally, the segments must be described with different customer characteristics to identify the rewarding consumers. Demographic and supporter-specific characteristics of the participants are considered (Table 6).

Table 6. *Identified Segments and Their Descriptive Characteristics*

	Demographic data		**Link to the club**		**Viewer behavior**		**Relative importance and price sensibility**
Segment 1	Age	MV: 32.26	identification with the club	MV: 3.98	home matches	MV: 3.52	
81 (32.27%)		SD: 9.954		SD: 1.224		SD: 1.590	
	Sex	♂ 85.19%	part of the club	MV: 3.35	away matches	MW: 2.05	
Price/performance-crowdfunder		♀ 14.81%		SD: 1.257		SD: 1.083	
	Net income	MV: 3.06	real supporter of the club	MV: 3.79			
		SD: 1.512		SD: 1.455	season tickets	19.75%	
	Distance	Median: 0.0 km			club member	17.28%	Price coefficient: -0.0331
Segment 2	Age	MV: 31.08	identification with the club	MV: 3.57	home matches	MV: 3.13	
68 (27.09 %)		SD: 8.381		SD: 1.201		SD: 1.455	
	Sex	♂ 80.40%	part of the club	MV: 2.88	away matches	MV: 1.88	
price-sensitive-crowdfunder		♀ 19.60%		SD: 1.191		SD: 1.140	
	Net income	MV: 2.97	real supporter of the club	MV: 3.24			
		SD: 1.500		SD: 1.383	season tickets	13.24%	
	Distance	Median: 0.0 km			club member	13.24%	Price coefficient: -0.1161
Segment 3	Age	MV: 34.99	identification with the club	MV: 4.37	home matches	MW: 4.14	
102 (40.64 %)		SD: 11.247		SD: 0.820		SD: 1.305	
	Sex	♂ 84.31%	part of the club	MV: 3.67	away matches	MW: 2.71	
charitbale-crowdfunder		♀ 15.69%		SD: 1.075		SD: 1.279	
	Net income	MV: 3.69	real supporter of the club	MV: 4.28			
		SD: 1.417		SD: 1.038	season tickets	38.24%	
	Distance	Median: 0.0 km			club member	25.49%	Price coefficient: 0.0154

*MV≙ Mean value **SD≙ Standard deviation

The first segment can be described as "price/performance-crowdfunder". The members of this segment identify with the club and are a part of the club. Regarding their preferences, price (43.99%) is the most important factor. The return offered and the project follow thereafter. The slightly negative price coefficient demonstrates that it is not mandatory to describe the segment members as price sensitive. However, price is both a limiting factor and the most important criterion. The VIP ticket is the most popular return, which receives a willingness to

pay 54.20 euros in combination with the non-profit youth project and 34.30 euros in combination with the commercial project (Table 4).

In the second segment, the club-supporter relationship is not as explicit as in the first segment. Thus, segment members are more sympathizers or neutrals than supporters. Regarding the features, the price (69.24%) is the dominant factor, followed by the return (30.01%). The project (0.75%) has no influence. In terms of the negative price coefficient of b = -0.116, the second segment is more price sensitive than the first.

Finally, segment 3 members have the strongest connection to the club. The offered return is the most important feature (52.56%), whereas the price (38.67%) is only the second most important feature. The project (8.77%) is less important. The relative low importance of the price and the positive price coefficient of b = 0.0154 suggests that members have a higher willingness to pay and are less price sensitive than the members of the two other segments.

Discussion, Implications and Limitations

Focusing on the project-related success factors, the calculated part values indicate that the offered return and the price are the two most important features for crowdfunders. The project itself does not play a major role. Considering the cited number of level effect for both price and return, the real importance may be more minor than calculated. However, both features are dominant, and the project is nearly negligible. Therefore, the project is not as important as described by the study of Ordanini et al. (2011). However, the non-profit project is more accepted than the commercial project. These results are consistent with previous findings by Brady et al. (2002), who underline the great relevance of non-profit projects. This result is also supported by the willingness to pay. The willingness to pay for the non-profit project is on average by 13.83 euros higher than for the commercial project over the entire sample. In line with Belleflamme et al. (2010) and Lehner (2013), non-profit projects seem to be more profitable because of the missing pursuit of profit and the resulting higher integrity. In addition to higher capital allocation, the clubs have a positive image effect when associated with the non-profit projects. On the basis of these results, sports clubs should use crowdfunding to finance non-profit projects, such as the development of their youth, in particular. Therefore, the non-profit project can be quantified as the first success factor for crowdfunding in sports.

Concerning the offered returns, the club-oriented return is preferred by the participants. Additionally, the donation is accepted as a return. There is lower acceptance of the voucher and the mention on club's homepage and Facebook site. Therefore, the participants prefer either a club-related return that contains a certain economic value or the donation as representative of a more altruistic return. This finding is most comparable to the decorative certificates of IPOs or fan bonds. They contain a certain economic value, but are simultaneously mostly used as merchandise articles by their holders, who do not necessarily collect the certificate's interest.

In terms of the club-related return, the example of the VIP ticket illustrates that the willingness to pay is higher for club-related returns than for external returns, such as the voucher. However, the costs are even higher for VIP tickets. Furthermore, the number of VIP tickets and therefore the potential financial returns are limited. In addition to VIP tickets, the clubs have the possibility to give other tickets but at lower prices. Nevertheless, external premiums such as vouchers also deliver a certain additional value for the clubs. However, clubs should attempt to reduce the cost of external premiums by integrating sponsors' products or services into their crowdfunding project, which might yield a win-win situation for both the club and its sponsors. However, sponsors' products or services must have a link to the club to fulfil the identified connection between the return and the club. In addition, the use of specialized crowdfunding platforms and their existing partners can also support clubs by organizing crowdfunding projects. As an alternative to the premiums of their sponsors or crowdfunding platforms' partners, clubs can also use merchandise articles (if available) for their crowdfunding projects. Immaterial, club-related returns, such as a meet and greet with the club's professional squad, can also be used.

In terms of donation, the results indicate that this option is most attractive from the club's perspective because of the favourable cost/benefit relationship. Other than administrative costs, clubs incur almost no costs for using donations. In the entire sample, the willingness to pay or donate is 13.63 euros for the commercial project and 27.46 euros for the non-profit project. The donation of higher sums generates a higher utility for crowdfunders of the first and third segment such that the donated sum should be freely selectable to exploit the maximum willingness to donate. Due to its attractive cost/benefit relationship, the donation should be the central component, particularly for non-profit projects.

The negative price coefficient indicates that low prices are more attractive than higher prices. These findings are consistent with those regarding fan bonds. Here, sports clubs specified that adequate denominations are essential to allocate sufficient financial capital. In line with Mollick (2012) and Schwendowius (2002), it seems that lower sums is also a success factor for crowdfunding projects in sports.

Associated with the price is the total sum that should be generated by crowdfunding. The platform fairplaid.org that was discussed above can be used as a reference. The projects financed in pure amateur sports show that between 200 and 20,000 euros can be allocated, with an average of 2,650 euros. Thus, crowdfunding in sports clubs is particularly appropriate for projects with low to middle levels of capital needs. In addition, this result reflects the findings of Mollick (2012), who argues that projects with lower target sums are more successful. However, it is expected that clubs in higher leagues with more supporters can generally raise more capital than pure amateur clubs or athletes. The real potential for more professional clubs is surely higher than the sums cited from fairplaid.org projects, such as the Jamaican bobsleigh team, who collected a six-digit amount.

The following segmentation showed that a deeper look into the data is necessary and useful to identify different types of crowdfunders in sports-related

projects. Focusing on the first segment, independently of the offered return, the willingness to pay is always higher for the non-profit project. It seems that this segment is willing to financially support their club to a certain degree. However, this group expects a reward for their money. Supporting their club is, therefore, the fundamental motivation to participate, but it is typically in combination with a certain economic value. The findings of the first segment support the results of Gerber et al. (2012) and Lambert and Schwienbacher (2010) regarding the important role of attractive returns. However, the identified emotional motives of Gorman et al. (1994) and Korthals (2005) are also important for first segment members. The price/performance crowdfunders are comparable to the consumer-oriented supporters in Herberger et al. (2013). Following the authors, the club's financial sustainability is a priority for these supporters. Youth development may be evaluated as more sustainable than short-term investments in the professional squad.

In contrast to the first segment, the members of the second segment are only willing to invest in a limited range. In addition, segment members prefer returns with a certain economic value and do not distinguish between internal and external premiums or the project. The motivation to participate is driven more by economic value than the desire to support the club. These findings are comparable with those of the study by Iyer et al. (2009), which underlines the important role of economic facets in the decision making of crowdfunders. The members of the second segment can be called "price-sensitive crowdfunders". This group cannot be counted as *fanvestors* considering their weaker emotional link to the club. This segment contains parallels to the group of neutral investors in Huth et al. (2014). Both groups focus primarily on the economic value of the offered return. It is notable that the second segment is the smallest. However, the questionnaire in the study was distributed primarily by the clubs. Therefore, more supporters than neutrals participated on the survey. This segment should be larger in reality considering the entire population of the cities represented by the clubs, for example.

The positive price coefficient in the third segment indicates that the utility grows with rising prices. This effect is known as the snob and Veblen effects (Diller 2008, Simon 1992). However, it cannot be assumed that there is a snob effect in the present case. Instead, the price function has a comparable function course. The price may be an indicator of the strong relationship to the club. Regarding returns' utility, the donation has the highest value (Table 3), which leads to the hypothesis that segment members have altruistic motives that can also be an explanation for the positive willingness to pay. Regarding the other returns, the voucher is the most unattractive premium. Therefore, the economic value plays a minor role for this segment of crowdfunders. Internal premiums such as the VIP ticket are more valuable, which also underlines their close relationship to the club. Thus, this segment best embodies the typical fanvestor. Both the fanvestor and the centred supporters (Herberger et al. 2013) have a great potential to be a financier of the club but without pursuing financial targets as maximizing returns. The support of their own club is central for both groups. Thus, the findings of segment 3 are most comparable with those of Guo (2011), Gerber et al. (2012) and Gerber

and Hui (2013), who posit that the pleasure in helping, which can also be understood as a consumptive motive, is a key factor for crowdfunders. Therefore, participation is more an act of consumption that generates a benefit regarding segment members' identification and support with the club than an act of investment with the aim of generating a financial return.

To achieve a successful capital allocation by crowdfunding, the clubs must address a wide range of potential participants. The charitable crowdfunder and price/performance crowdfunder, who are similar in socio-demographic and supporter-specific characteristics, are most important for the clubs because both have a high probability of participation. Due to their close connection with the club, members of both segments can be contacted by the club's homepage or other channels, such as social media and at home matches, because they regularly attend the club's games.

Crowdfunding can be a useful financial mechanism for both semi-professional and professional clubs. Semi-professional clubs cannot realistically issue bonds or go public because of the relative high issuance costs of these mechanisms. Therefore, these clubs must find an alternative and must operate more creatively. As described by Lambert and Schwienbacher (2010), crowdfunding can lead to a high publicity of the club so that more generally interested persons may be attracted by an interesting crowdfunding project.

Professional clubs should also not ignore crowdfunding. Fan bonds and IPOs have high bureaucratic burdens, particularly with respect to the issuance prospectus. Additionally, the average issuance costs of fan bonds are 3.8% of the intended bond volume (Fox and Weimar 2014). Crowdfunding can be a cost-effective and less bureaucratic alternative. Due to the greater number of supporters, participants' demands should be higher for professional teams. The figures of fan bonds indicate that sums in the 3-8 million euro range should be generated by crowdfunding projects. Considering the results of altruistic supporters in the context of sports clubs (Huth et al. 2014, Schwendowius 2002), similar developments can be expected for crowdfunding.

Conclusion

The present study illuminates success factors for crowdfunding in sports clubs. Furthermore, it identifies potential crowdfunders and indicates that they should have a certain link to the club to maximize the financial potential of a crowdfunding project. In line with previous studies (Huth 2018a, 2018b), the results show that crowdfunding can be a useful financial mechanism for both semi-professional and professional clubs.

Focusing on semi-professional clubs, it has to be mentioned that they cannot realistically issue bonds or go public because of the relative high issuance costs of these mechanisms. Therefore, these clubs must find an alternative and must operate more creatively. As described by Lambert and Schwienbacher (2010), crowdfunding can lead to a high publicity of the club so that more generally interested persons may be attracted by an interesting crowdfunding project.

Therefore, crowdfunding is a highly interesting financial instrument for semi-professional clubs.

In addition, professional clubs should also not ignore crowdfunding. Fan bonds and IPOs have high bureaucratic burdens, particularly with respect to the issuance prospectus. Additionally, the average issuance costs of fan bonds are 3.8% of the intended bond volume (Fox and Weimar 2014). In contrast, crowdfunding can be a cost-effective and less bureaucratic alternative. Due to the greater number of supporters, participants' demands should be higher for professional teams. The figures of fan bonds indicate that sums in the 3 to 8-million-euro range should be generated by crowdfunding projects. Considering the results of altruistic supporters in the context of sports clubs (Huth et al. 2014, Schwendowius 2002), similar developments can be expected for crowdfunding.

However, this crowdfunding study cannot address all the issues or answer all the questions. Therefore, further research is needed in certain topics. Four selected issues that are considered crucial are presented below.

The willingness to pay was measured by fictive projects. Transferring these findings to the identified willingness to pay for real projects is not possible without restrictions. Previous studies of Huth (2018a, 2018b) show that the real willingness to pay can be lower than in the present study. In contrast, Krupa et al. (2020) show that individual donations of people who support sport campaigns were relatively high in comparison to other categories. In future studies, the willingness to pay for other real sports club crowdfunding projects should be measured and compared with this study's findings to achieve a more detailed and clearer view.

Apart from this point, the measurements of the willingness to pay showed a positive price coefficient for the charitable crowdfunder. Therefore, it was not possible to calculate this segment's maximum willingness to pay or donate. It is expected that saturation – and therefore decreasing demand – will occur as prices increase. Through the integration of higher prices, the maximal willingness to pay can be identified in future studies.

In this study, the supporters of two clubs in the third and fourth highest divisions of their sports in Germany were surveyed. In future studies, sports clubs from other sports and other (higher) leagues should be evaluated. As demonstrated, the crowdfunding mechanism may be a cost-efficient alternative to existing mechanisms – including fan bonds or IPOs – for higher-ranked clubs. It would be worthwhile to evaluate the market potential of crowdfunding for these clubs in comparison to the two other mechanisms. However, clubs from other sports should also be considered because of the cost-efficient structure of crowdfunding.

Finally, the motives of potential crowdfunders in the area of sports can be evaluated and compared with results from other sports-related studies or from other areas, such as the music and film industries. Considering the returns offered for the crowdfunder, the present study considered four different returns in total. As discussed in the last part of the present study, other returns are also possible for sports clubs. Therefore, an important issue is to identify which returns are most popular for sports fans. Previous sales figures of merchandise articles can offer

helpful support for the initiators of a crowdfunding project if merchandise articles are also selected as an offered return.

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Nutritional Status and Adequacy of Dietary Intake of an Elite 1000m Flat Water Kayak Paddler

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Background: Sports performance, besides the mental and emotional features of the athlete, is the outcome from the correct combination of training load, rest/ recovery and nutrition. Nutritional deficits or excesses can be deleterious for sports performance, particularly in sports that rely on high power output as 1000m kayak paddler. Objective: To describe the nutritional intake habits of a highly performing kayaker, and its adequacy for training, as only few studies have focused on this type of sports. Methods: An elite male kayaker specialized in 1000m flat-water races, World Champion, European Champion and Silver medallist in the London Olympic Games (35 years) reported his food intake for 7 consecutive days during a specific preparation period. Results: Daily average energy intake was 3174 ± 306 kcal; the intake of carbohydrates was 47.8 ± 9.3% (4.4 ± 1.2 g.kg^{-1}. body weight. day^{-1}), protein 20.8 ± 4.3% (1.9 ± 0.3 g.kg^{-1}body weight. day) and fat intake was 31.4 ± 5.2% (1.3 ± 0.2 g. kg^{-1} body weight day. d^{-1}). Fiber average consumption was 23.6 ± 9.2 g/day and cholesterol 638 ± 218 g/day. While water-soluble vitamins were within the recommended levels, fat-soluble vitamins and beta-carotene were below athletes' recommendations. All macro minerals intake was within the Dietary References Intake (DRI) for general population values as well as the trace elements with exception of iodine and molybdenum. Also, an unbalanced ratio between omega-6/omega-3 fatty acids was observed. Conclusion: This kayaker had a caloric intake adequate to the training requirement of the analyzed week. However, a reduction in fat intake and an increment in carbohydrate should be promoted in order to achieve dietary recommendations for athletes. The low intake of fat-soluble vitamins and beta-carotene found may justify the use supplementation.

Keywords: *kayaking, nutrition, macronutrients, vitamins, minerals*

Background

The balance between energy intake and expenditure is a primary concern for athletes. Ensuring adequate nutrition around training sessions is critical for recovery and performance (Beck et al. 2015). Energy requirements are individual, but are often high due to maintain a high level of lean muscle mass and the meet the needs of a high volume and frequency of training particularly in sports with a high-power demand like 1000m kayak paddling. For almost all sports, training and

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competition at the highest level is incompatible with energy deficits. Chronic energy deficits in active subjects reduces the size of fast-twitch fibers (Henriksson 1992), which are important for flat-water elite canoeists. Athletes may experience chronic fatigue when carbohydrate intake is insufficient to match energy demands of heavy training (Costill et al. 1988) and kayak paddling gets the majority of fuel from carbohydrate given its intensities above 75% VO2max (Stellingwerff 2011). Several studies point to nutritional deficits and/or nutritional imbalances, mainly reduced CHO intake, in different sports as young male soccer players (Rodrigues Santos and Vasconcelos 2009), male futsal players from different competitive levels (Silva et al. 2012), male (Rodrigues dos Santos et al. 2011) and female (Rodrigues dos Santos et al. 2013) middle-distance runners, however nutritional information in kayak paddling is limited raising the need for more research.

Elite flatwater kayak paddlers commonly train at least twice a day, 6 days/ week during pre-competitive period. Training varies between on-water (i.e., in the boat) and out-water (gym, run, bicycle, swimming) sessions focusing on both aerobic and anaerobic capacity, as well as strength and power development. This type of training is very demanding and any nutritional or energy deficit can compromise both the performance and the athlete's health status (Lee and Lim 2019). Moreover, several athletes of Sprint Canoe/Kayak have to fund training or competition expenses as they're not professionals and balance by themselves the high-energy needs being prepared with appropriate training snacks around training and work schedules (sports dietitians Australia) requiring knowledge about carbohydrate and protein intake that they lack (Doering et al. 2016). The athlete depends not only on weight control and proper body composition, but also on meeting the needs of vitamins and minerals and even on the way the meals are distributed on the day to improve your sports performance and achieve results allowing his entry as professional in national and international sports teams.

With this case-study, we intended to describe and compare the adequacy of the nutritional intake of an elite male 1000m flatwater kayaker, a power-based sport, in the sense of detecting eventual nutritional conditions that may lead to compromised recovery between training efforts or athlete's performance adding knowledge to current literature.

Methods

The athlete is a 35-year-old elite male kayak paddler, with over 15 years of sport experience at the highest international level. He is a former World champion, European champion and silver medallist in the Olympic Games of London. He was committed to get position for the Olympic Games in Japan. Training characteristics during the nutritional collection week are presented in Table 1.

Table 1. *Training Distribution over the 7 Day Micro Cycle of a Specific Preparation Period*

Day	Morning	Afternoon
Monday	Water. 15 km. 6 x 250m (115/120 spm), rest 5'. Stretching (Str)	Gym (Strength). 6 exercises x 6 RM x 6 sets + Abdominals/Lumbars. Str
Tuesday	Water. 15 km. 2 x 1000m / rest 8' (250m at 85 spm, 500m at 90 spm, 250m at 95 spm) + 2 x 750 m / rest 8' (250m at 115 spm, 250 at 110 spm, 250m at 115 spm). Str	Water. 10 km. Easy pace. 65 spm. Str
Wednesday	Water. 15 km. 8 x 45" (110 spm) 1'15" rest. Recovery 6'. 8 x 30" (115 spm), 1'30" rest. Str	Gym (Strength). 6 x 20 reps/rest 40", 55% Maximum Load + Abs/Lumb. 30' running. Str
Thursday	Water. 10 km. 6 x 10"/rest 1'50". Maximum pace. Start stopped. Str.	Rest
Friday	Water. 15 km. 2 x 1000m / rest 8' (250m at 85 spm, 500m at 90 spm, 250m at 95 spm) + 2 x 750 m / rest 8' (250m at 115/120 spm, 250 at 110/115 spm, 250m at 115/120 spm). Str	Gym (Strength). 6 exercises x 6 RM x 5 sets + Abdominals/Lumbars. Str
Saturday	Water. 15 km. 7 x 50" at 105 spm/1'10" rest. Recovery 6' + 7 x 35" at 110 spm / 1'25" rest. Str.	Water. 8 km. Easy pace (65 spm) + Str.
Sunday	Water. 10 km. Easy pace. (65 spm) + Str.	Rest

Note: a specific warming-up preceded every workout. spm = strokes per minute; RM = repetitions maximum; Str=Stretching

Body weight was assessed with a SECA 899 (SECA, Hamburg Germany) digital scale every morning in fasting at the same time (7 a.m.) and before the first training session of the day, wearing minimal underclothing.

The participant was informed about the benefits and risks of participating in the current study prior to signing an informed consent form, which was approved by the ethic board of the local university. Experimental procedures were in accordance with the Helsinki Declaration and ethical principles for medical research involving human subjects (Harriss et al. 2019).

Nutritional Data Collection

The athlete reported all food and supplements ingested for 7 consecutive days through a food record divided as follows: breakfast, morning snack, lunch, afternoon snack and dinner. A dossier with informative photographs with the standard quantities of the main foods was delivered and the athlete informed of the correct way to fill in the forms according to the quantities consumed. Mean daily food intake was converted to nutrients using ESHA's Food Processor Nutrition Analysis software (Bazzano et al. 2002). For the consumption of macronutrients, we took as reference the work of Stellingwerff et al. (2011), specific for the power type athletes like ours and American College of Sports Medicine proposals (American College of Sports Medicine 2009; for micronutrients we followed Whiting and Barash (2006) and Murray and Horswill (1998) proposals.

Results

The athletes' biometric features include height of 185 cm, body mass of 87 kg (without significant changes during the 7-day micro cycle) and a BMI of 25.42 kg/ m^2. Mean energy and macronutrients intake are presented in Table 2. Data shows the kayaker has an adequate energy intake with an average of 3174 (± 306) kcal daily. However, there is a low carbohydrate intake (4.4 ± 1.2) $g.kg^{-1}.day^{-1}$, a high intake of cholesterol and reduced ingestion of dietary fibres.

Table 2. *Mean Values (±SD) for Energy and Macronutrients Intake*

Variables	Mean ± SD	Minimum	Maximum	recommendations
Energy intake (kcal)	3174 ± 306	2722	3631	
Energy intake ($kcal.kg^{-1}.day^{-1}$)	36.0 ± 3.4	31.2	40.8	50 $kcal.\ kg^{-1}.day^{-1}$ (a)
Protein ($g.day^{-1}$)	163.4 ± 29.0	121.0	211.0	
Protein (%)	20.8 ± 4.3	15.0	25.4	
Protein ($g.kg^{-1}.day^{-1}$)	1.9 ± 0.3	1.39	2.43	~1.5-1.7 $g.kg^{-1}.day^{-1}$ (b)
Carbohydrate ($g.day^{-1}$)	383.4 ± 103.3	260.0	576.0	
Carbohydrate (%)	47.8 ± 9.3	38.2	63.5	
Carbohydrate ($g.kg^{-1}.day^{-1}$)	4.4 ± 1.2	2.99	6.62	~6-10 $g.kg^{-1}.day^{-1}$(b)
Fats (%)	31.4 ± 5.2	21.6	36.4	
Fats ($g.kg^{-1}.day^{-1}$)	1.3 ± 0.2	1.0	1.53	~ 1-1.5 $g.kg^{-1}.day^{-1}$(b)
Saturated fats (%)	11.5 ± 2.3	6.4	13.4	
Monounsaturated fats (%)	11.9 ± 1.8	8.6	13.9	
Polyunsaturated fats (%)	4.8 ± 1.5	3.0	7.4	
Cholesterol (mg)	638 ± 218	420	1066	
Dietary fibre (g)	23.6 ± 9.2	12.4	40.6	20-35 g/day (c)
Complex CHO (%)	15. 7 ± 3.6	11.0	20.7	
Sugars (%)	20.2 ± 9.2	9.7	36.4	
Caffeine (mg)	5.8 ± 5.9	0	13.4	
Alcohol (g)	0	0	0	
Insoluble fibers (g)	14.1 ± 7.8	2.71	28.0	
Soluble fibers (g)	4.0 ± 1.9	0.95	6.94	
Water (ml)	1790 ± 544	1245	2665	

a) according to National Research Council (1989); b) according to Stellingwerff et al. (2011); c) according to Marlett et al. (2002).

According to Table 3 the athlete shows an adequate intake of hydro-soluble vitamins and a reduced intake of fat-soluble vitamins also a high intake of trans fatty acids and an unhealthy ratio omega6/omega3 fatty acids (8:1).

Table 4 shows that macrominerals and trace minerals intakes are all within, or exceed, the international recommendations for athletes, with exception of iodine and molybdenum.

Table 3. *Mean Values (±SD) for Vitamins and Fatty Acids Intake*

Fatty acids	**Mean ± SD**	**Minimum**	**Maximum**	**DRI***
Omega-3 fatty acids (g)	1.4 ± 0.3	1.09	2.0	6 g
Omega-6 fatty acids (g)	11.6 ± 2.9	8.26	16.1	9 g
Trans fatty acids (g)	4.5 ± 4.4	0	9.77	
Oleic acid (g)	33.6 ± 5.6	27.5	42.9	
Arachidonic acid (g)	0.3 ± 0.2	0.09	0.57	
Vitamins	**Mean ± SD**	**Recommendations for athletes (Murray and Horswill 1998)**		
Thiamine (mg)	3.4 ± 0.9	1.5 mg		
Riboflavin (mg)	2.7 ± 0.4	1.7-1.8 mg		
Niacin (mg)	35.7 ± 8.4	19-20 mg		
Vitamin B6 (mg)	3.2 ± 0.8	2 mg		
Vitamin B12 (µg)	7.0 ± 1.2	2 µg		
Folate (µg)	351.1 ± 138.9	200 µg		
Pantothenic acid (mg)	7.5 ± 1.3	4-7 mg		
Vitamin A (µg)	388 ± 135	1000 µg		
Vitamin A Carotene (µg)	165 ± 110	6000 µg		
Vitamin C (mg)	302 ± 224	60 mg		
Vitamin D (µg)	3.1 ± 0.9	10 µg		
Vitamin E (mg ET)	7.9 ± 2.3	10 mg		
Vitamin K (µg)	36.4 ± 27.3	70-140 µg		

*Dietary reference intakes (Erasmus 1993).

Table 4. *Mean Values (±SD) for Macrominerals and Trace Minerals intake*

Macrominerals	**Mean ± SD**	**DRI***
Calcium (mg)	848.1 ± 1	800-1200 mg
Magnesium (mg)	431.4 ± 76.8	350 mg
Phosphorus (mg)	1772 ± 140	800-1200 mg
Potassium (mg)	4523 ± 1309	1875-5625 mg
Sodium (mg)	3089 ± 1142	1100-3300 mg
Chloride (mg)	856 ± 606	2300 mg
Trace Minerals		
Copper (g)	1.8 ± 0.5	0.9 g
Iron (mg)	21.1 ± 4.4	8 mg
Manganese (mg)	3.2 ± 1.0	2.3 mg
Selenium (µg)	179.3 ± 22.7	55 µg
Zinc (mg)	19.9 ± 5-7	11 mg
Boron (mg)	3.4 ± 1.7	NA
Iodine (µg)	66.5 ± 8.1	150 µg
Molybdenum (µg)	12.6 ± 9.9	45 µg

*Dietary reference intakes. American College of Sports Medicine (2009).

Discussion

The nutritional needs for elite athletes must be considered individually and adjusted to the requirements of training and competition. Kayakers rely on high power output for success and only very few studies have focused on the complexity of power sports nutritional demands. The aim of our study was to describe the pre-competition nutritional intake of an elite male 1000m flat-water kayak paddler and

its adequacy to guidelines. The average value of the daily energy supply for our kayaker was 36.0 ± 3.4 Kcal/kg of body weight/day. Our athlete's average energy intake is in line with previous work on Portuguese male elite canoeists showing an intake around 3261 ± 454Kcal in the same pre-competitive period (Morgado and Sousa 2016). However, Burke et al. (2001) found average male energy requirement of 55 Kcal/Kg of body weight/day. While this discrepancy could not be of relevance it might also translate the common concerns that this type of athletes have with their body weight as increased body fatness may raise the drag force and reduce efficacy of paddling (Michael et al. 2009).

Elite kayakers usually practice twice a day with each workout session lasting between 1.5 and 2 hours. This type of training is very demanding at several levels, with the binomial recovery/nutrition being of fundamental importance. Energy, carbohydrate and protein needs must be met during this exhaustive training to maintain body weight, resynthesize muscle glycogen, and provide sufficient protein to build and repair muscle tissue. During our data collection, the athlete's body weight remained stable with slight daily variations not exceeding 100g which can be suggestive of the adequacy of caloric intake to caloric expenditure. While energy intake appears to match caloric expenditure, the relative contribution of the various macronutrients in our participant does not seem to be the most adequate, considering the Stellingwerff et al. (2011) recommendations. The values of CHO ingestion, either as a percentage of total energy intake or when relative to body weight, are very low in relation to the recommendations (6-10g CHO kg bw. day) for power athletes (Stellingwerff et al. 2011) in pre-competition period. When training is intensified, low CHO intake reduces muscle glycogen concentration, increases muscular fatigue (Costill et al. 1988) and may compromise immune function reducing the ability to cope with exhaustive load (Maughan and Poole 1981). We can hypothesize that at least in some workouts this kayaker might have a suboptimal level of glycogen stores with probable deleterious effect on training intensity and mood for hard training given the high training volume requiring carbohydrate-rich foods to provide the energy provision. Nevertheless, potential beneficial effects on performance were still found in extremely low carbohydrate diets (3-15% carbohydrate) (Coggan and Coyle, 1991, Maughan and Poole 1981) during specific training sessions but more research is needed according to Burke et al. (2011).

Given the high protein intake, it can contribute not only to tissue repair but also to glycogen synthesis through gluconeogenesis. For 50 g of glucose produced, 34-40 g come from glycogenesis, 8-14 g from protein deamination and 2-3 g from glycerol (Fromentin et al. 2013). Protein intake in the range of 1.3-1.8 $g.kg^{-1}.day^{-1}$ maximize muscle protein synthesis in athletes (Phillips and Van Loon 2011). The average values of protein ingested in this study seem adequate not only for muscle repair and accretion as well as for energetic purposes. According to Stellingwerff et al. (2011) besides the amount of protein intake it seems also important to consider the timing and type in relation to exercise sessions. Fat intake is within dietary references for athletes (Rodriguez et al. 2009) particularly for this preparation phase where fats are an important source of energy. However, the problem is that the high fat intake seems to be made at the expense of CHO.

Regarding the type of fats, there is an average high intake of saturated fats (SFs) and a reduced intake of polyunsaturated fats (PUFs). Our athletes' intake of monounsaturated fats (MUFs) is adequate and reflects the Mediterranean dietary pattern (Davis et al. 2015).

Despite, epidemiological studies suggest that reducing dietary SFs reduces the risk of cardiovascular events and myocardial infarction (Hooper et al. 2015), in our view, these approaches lose consistency in the high-performance sports field. The focus should be on the effects of the imbalance between intake of SFs in relation to intake of PUFs. Reduced intake of PUFs namely the two essential fatty acids (EFAs), alpha-linolenic acid (ω3) and linoleic acid (ω6) can negatively affect the production of prostaglandins, which support the regulation of blood viscosity, inflammatory processes, blood cholesterol and fat levels, and water balance (Oesterling et al. 1972). It is well known that exhaustive exercise is a remarkable producer of inflammation outbreaks. Since the body does not synthesize EFAs, they must be provided by the food. The Western diets, namely Mediterranean diet, provide a high amount of ω6 fatty acids. This nutritional condition favors the formation of eicosanoids that arise from the oxidation of arachidonic acid and related PUFs by cyclooxygenase, lipoxygenase and cytochrome P450 enzymes and via non-enzymatic free radical mechanisms (Dennis and Norris 2015). Eicosanoids are related to the pro-inflammatory response. Non-steroid anti-inflammatory drugs, prostanoids and dietetic fish oil ω3 fatty acid supplementation control the action of eicosanoids (Norris and Dennis 2012). Therefore, the high intake of ω6 fatty acids to the detriment of ω3 can accentuate the inflammatory processes naturally induced by exercise and delay recovery between efforts. Although there is no consensus among nutritionists, a daily intake of 9 g of ω6 and 6 g of ω3, and therefore a ratio of 1.5-1.0, is recommended (Erasmus 1993). In this study, the average intake of ω6 exceeds the recommendations while those of ω3 is far below the recommendations. The ratio ω6:ω3, 8:1, can hinder the buffering of inflammatory processes. Other studies found a similar scenario (Rodrigues dos Santos et al. 2010, 2013). In order to rebalance this particular aspect of the diet, the athlete should increase the consumption of cold-water fish such as salmon, mackerel and sardines however, there is no evidence of the relationship between the consumption of ω3 rich foods and sports performance. Huffman et al. (2004) showed that supplementation with ω3 fatty acids did not improve endurance performance during a maximal bout of exercise. A more balanced diet is desirable since nutrition does not make a champion but can prevent it from being. Our athlete has a high average consumption of trans fatty acids. These fatty acids, processed or natural occurring, are related to several diseases (Souza et al. 2015). In an athlete with a very high level of training, the clinical perspective does not apply, however, the intake of foods rich in trans fatty acids should be reduced as much as possible and not exceed 2 g/100g fat per day (Leth et al. 2006). Cholesterol is mainly synthesized from dietary saturated fats and there is no scientific evidence to validate the hypothesis that dietary cholesterol increases blood cholesterol (Soliman 2018). Our kayaker has a high uptake of dietary cholesterol directed related to the high uptake of SFs. At first glance, this athlete's lipid outlook could be worrying - high intake of SFs, dietary cholesterol, and total

fat. However, blood tests done regularly by this kayaker point to blood values of triglycerides and cholesterol within normal laboratory values (data not shown). Exhaustive daily training is the best way to neutralize the possible deleterious effects of a high fat diet (Suk and Shin 2015). The recommendations for the consumption of dietary fibers is 20 to 35 g per day (Escudero and Gonzalez 2006), that is, twice the consumption of our athlete. For the good functioning of the digestive system, it is advisable to reduce the simple sugars, processed foods and increase the foods rich in fiber. Moreover, our athlete does not drink any alcohol. This is a healthy behavior because chronic alcohol consumption is related to unfavorable changes in the immune system, the clotting process and brain integrity (El-Sayed et al. 2005). Caffeine intake, between 0 and 13.4 mg, is not significant because a single cup of espresso takes about 60 ml of coffee, and contains about 126 mg of caffeine.

According to the highly referenced work of Erp-Baart et al. (1989), when energy intake ranges between 2388 and 4776 kcal/day vitamin and mineral intake is most probably sufficient. Our data only partially confirm this statement. Although caloric intake is within the referred values, the intake of water-soluble vitamins exceeds while the intake of fat-soluble vitamins is below the recommendations for athletes (Murray and Horswill 1998). Nevertheless, the low fat-soluble vitamin intake does not seem to be problematic for this athlete. Photochemical processes from the cholesterol can synthesize vitamin D. Adequate amounts of vitamin E are necessary to prevent peroxidation of tissue PUFs and Vitamin E deficiency, extremely rare in humans, is unlikely caused by dietetic limitations (Kemnic and Coleman 2021). The intake of vitamin E in our athlete despite below the recommendations, is in line with the low intake of polyunsaturated fatty acids as low PUFs intake reduce the needs of vitamin E (Raederstorff et al. 2015). An intake of 0.6 mg alpha-tocopherol equivalents per gram linoleic acid is generally seen as adequate for human adults (Valk and Hornstra 2000). Our data of 7.9±2.3 mg of vitamin E for 10.5±3.0g of linoleic acid, gives a surplus of antioxidant protection. Vitamin K1 (phylloquinone) derives from green leafy vegetables while vitamin K2 (menaquinone) is synthesized in the gut from the bacteria. Even in a situation of low dietary intake, synthesis in the ileum from the bacteria seems sufficient to respond to the body's demands (Conly and Stein 1992). However, to normalize the intake of phylloquinone, the athlete should be advised to eat more green leafy vegetables such as parsley, spinach, broccoli and kale. These foods also benefit bone metabolism and the coagulation system (Sim et al. 2020). The low values of vitamin A and beta-carotene intake observed in this athlete should be adjusted to optimize immune response to exercise, maintenance of epithelial cells integrity and protection against oxidative free radicals (Bar-El Dadon and Reifen 2017). Reactive oxygen species (ROS) and reactive nitrogen species (RNS) produce both deleterious and beneficial effects. Overproduction of ROS (arising either from mitochondrial electron-transport chain or from excessive stimulation of NADPH) results in oxidative stress (Valko et al. 2007). During training, kayakers dramatically increase their oxygen consumption and this probably raises free radicals' production, which are known to have a plethora of deleterious effects (Radak et al. 2013). Some diseases, like cancer or cardiovascular diseases are associated

with increased ROS production (Halliwell 2012). These highly reactive molecular species are capable to damage some important macromolecules as DNA, proteins, carbohydrates, and lipids (Valko et al. 2007). The first line of defense against oxidative stress is enzymatic – superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase/glutathione reductase (GPX) (Ighodaro and Akinloye 2018). We can consider exogenous antioxidants (tocopherol, ascorbate, ß-carotenes, flavonoids) provided by the diet as the second line of defense against oxidative stress. It is common practice in sport to ingest high amounts of anti-oxidant substances to combat oxidative stress induced by prolonged and/or intense exercise (Valko et al. 2007). The effects of these practices are dubious. For instance, many polyphenols, such as the flavonoids, have remarkable antioxidant activity *in vitro* but there are few, if any, compelling data that polyphenols exert antioxidant effects *in vivo* (Halliwell et al. 2005). Some authors highlight the beneficial effects of ROS. ROS have become increasingly recognized to mediate some adaptive responses in skeletal muscle induced by exercise. Therefore, exercise-associated increases in ROS are likely to involve redox-sensitive signaling effects rather than oxidative damage (Webb et al. 2017). Regardless of the benefits or harms of ROS, an athlete should enrich his diet with fruits, grains and vegetables that in addition to fight antioxidants have other benefits for the individual's health (Halliwell 2012).

All macrominerals, with the exception of chloride, are within or exceed the DRI. The low mean chloride intake in our athlete has no clinical significance because, in healthy individuals, NaCl homeostasis is fine-tuned in renal collecting ducts where Cl urinary excretion is balanced with dietary salt intake (Rajagopal and Wallace 2015). These low values of Cl are in line with the ones found in other studies in elite athletes (Siqueira and Rodrigues dos Santos 2004, Rodrigues dos Santos et al. 2010).

With the exception of iodine and molybdenum, all trace minerals are within the recommendations. Selenium, manganese, cooper and zinc, the principal minerals linked to antioxidant defense respect the recommendations (Alkadi 2020). To avoid persistent iodine deficits the athlete must increase the consumption of fish. Low average values of molybdenum can affect the formation of the enzyme xanthine oxidase, which is fundamental to transform xanthine into uric acid (Rajagopalan 1988). To correct this nutritional deficit the athlete should increase the consumption of milk, vegetables and whole grains. These foods are excellent sources for almost all macro- and macrominerals.

Conclusion

This case study reports the regular nutritional intake in a specific preparation week of an elite kayaker. Despite the mean energy input is below some recommendations it is in line with previous work in a similar population. While protein intake matches the recommended needs for muscle repair and accretion in power type athletes, the low carbohydrate intake might raise some concerns for the best energy conditions during high intensity workouts. So, it is suggested to reduce

the percentage of energy from fat and increase the supply derived from CHO. Despite the high intake of fats, some fat-soluble vitamins – A, D, E, and K do not meet the recommendations for athletes. Although intake of beta-carotene is low, the adequate ingestion of micro minerals, connected with the antioxidant defense, points to the potentiation of endogenous mechanisms to fight oxidative stress.

Based on our data, an increase in the supply of CHO and some vitamins and minerals seems justified for this athlete, either through supplementation or through enrichment of the diet with specific foods that cover the deficits found, in order to achieve recommended quantities for power athletes.

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Failure Response and Coping among Female Collegiate Athletes

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The current study explores the failure response and coping skills of 37 female collegiate athletes. All athletes completed the Athletic Coping Skill Inventory (ACSI-28) the Performance Failure Appraisal Inventory, and four athletes were interviewed. Descriptive statistics for the five subscales of the Performance Failure Appraisal Inventory (Form A) for the entire sample showed that fear of experiencing shame and embarrassment was the highest fear (M=3.27, SD=0.80), followed by fear of upsetting important others (M=2.77, SD=0.89). Descriptive statistics for the seven subscales of the Athletic Coping Skills Inventory for the entire sample showed that coachability had the highest score (M=10.06, SD=1.51), followed by confidence and achievement motivation (M=8.63, SD=1.74). Comparisons were also made based on athlete status (underclassman vs upperclassman) and by team status (team vs individual). Based on athlete status, a significance difference (p=0.05) on the PFAI inventory was found for fear of shame and embarrassment (under 3.5 mean, upper 2.89 mean, p=0.02), fear of uncertain future (under 1.26 mean, upper 0.60 mean, p=0.02), and overall score (under 2.61 mean, upper 2.15 mean, p=0.03). For all of these categories, upperclassmen were less likely than underclassmen to describe themselves as feeling fear of shame and embarrassment, fear of an uncertain future, and overall score. On the ACSI inventory, a significance difference was found for freedom from worry (under 4.8 mean, upper 6.84 mean, p=0.05). As indicated, upperclassmen are free from worry more than are underclassmen. Based on team status, no significant differences were found between team vs individual sport athletes on the PFAI inventory. On the ACSI inventory, a difference was found for peaking under pressure (team 7.84 mean, 5.66 individual mean, p=0.02). This finding indicates that team sport athletes, more so than individual sport athletes, feel challenged rather than threatened under pressure situations and perform well under pressure.

Keywords: *coping, athletes, coaches, failure*

Introduction

The world of athletics is constantly addressing success and failure at all levels of sport. From youth sports to Olympic qualifiers, there are similar situations that athletes will face. How does an athlete respond when an action or event does not go the way it is intended? Does that wrong action result in failure? Split second actions, decisions, and moments can be the difference between success and failure.

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Are athletes ready to respond to the negative possibility as well as they respond to the positive possibility? Having a failure plan or failure response benefits athletes in returning to their peak performance faster, helping them learn from experiences to overcome previous failures, and brings them a step closer to excellence and success.

How a person responds to failure is classified as 'coping' (Loscalzo 2014). Coping refers to constantly changing cognitive and behavioral efforts to manage specific and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus and Folkman 1984). That reaction will look different for each individual, and when studied, a pattern of reactions has been classified as styles of coping. It is important to note that coping does not state the level of effectiveness or success, it is only a focused attempt to manage situational demands. The reaction or lack of reaction is an attempt to work through or past failure, and with athletes, it goes hand in hand with performance. Coping has been viewed as reactions (during or right after performance responses) and long-term adaptations (or strategies or purposeful actions) that can be either maladaptive or adaptive, and either can be deemed effective or ineffective (Poczwardowski and Conroy 2002). Sometimes athletes will be able to successfully move past the failures through coping, while other times the coping strategies may not be of any use, or even increase the detriment of performance.

Athletes have different methods to respond to failure (Moreno-Murcia et al. 2019). Poczwardowski and Conroy (2002) have identified four styles of coping that frequently appear in athletes responding to failure. These coping styles are described as: problem-focused coping (problem-oriented strategies directed to the environment and self), emotion-focused coping (managing emotional responses to stress and changing the meaning of situations), appraisal-focused coping (appraising or reappraising stressful situations using reframing of situations or logical analysis), and avoidance-focused coping (behavioral and psychological efforts to disengage from the demanding situation). Similar to the four styles described by Poczwardowski and Conroy (2002), Anshel (1996) described two primary coping styles, approach coping and avoidance coping.

The value of studying an athlete's coping style improves the ability to predict an athlete's use of coping strategies in response to stressful events in the future (Anshel et al. 2010). This further improves the ability to predict an athlete's use of coping strategies in response to events of similar stressors in the future.

The approach coping style, can be defined as attention, sensitization, monitoring, engagement, and vigilance, and consists of a conscious overt action or thought in response to a stressful stimulus or event in which the person attends to the stressor for the purpose of reducing or managing the unpleasant experience (Anshel et al. 2010). An approach coping style reflects cognition, emotion, or behavior that is oriented towards threats. Actively seeking a solution for the feeling, actions, problems that have arisen within performance is the best illustrator of this particular style.

Avoidance coping style, which embodies desensitization, distraction, repression, blunting, passive, and disengagement coping consists of the conscious decision to physically remove oneself from perceived threat, filtering out

information, or turning away from threatening cues. Examples include walking away from the source, avoiding a threatening or unpleasant situation, psychological distancing, discounting, selective attention, and distraction (Anshel et al. 2010). Removing the action, mistake, or cause for failure and moving onto the next possible opportunity shows coping in its true form.

As consistent as the research is for both avoidance and approach coping strategies, there is very little research that takes the next step and looks for differences between gender or people from different backgrounds or walks of life. Of the little research that is available, results suggest females use more emotion-focused versus problem-focused coping strategies and are more likely to seek social support. Females tend to self-reflect and think about how they might have done things differently, where their male peers do not. Males are more likely to use fate as a coping strategy (Anshel et al. 2010). Additionally, avoidance coping is better learned and more often used by elite athletes under situational conditions. The ability to process, then filter out, and quickly discount the source of stress, or reduce its importance is unique among the better skilled, more successful athletes (Anshel et al. 2010). Limitations present themselves when responses are not an immediate test/evaluation, having to use long term recall instead of getting results right after a competition, practice, or event (Anshel et al. 2010). Being able to gather responses immediately after a competition, practice, or performance would offer more insight into how athletes react to failures and how they respond in the moment to meet the need.

Reactions to high intensity and stressful situations can change the response of athletes. Sometimes one coping style is better for a situation than another. Roth and Cohen (1986) and Mullen et al. (1982) suggested that approach coping is the preferred style in conditions where an athlete has high perceived control of the situation, and when the stress is known to an athlete. Approach coping is preferred when an athlete has relatively high confidence and good communication skills and knows what is going on in the situation, and the situation is individually manageable (Anshel and Anderson 2002). Similarly, a confident athlete will use approach coping after experiencing unexpected failure by analyzing what went wrong if there is sufficient time for introspection. Approach and avoidance coping styles are not conceptually independent, as Roth and Cohen (1986) claimed that people may alternate rapidly between each disposition.

Acute stress creates different actions and reactions. Researchers concluded that avoidance coping techniques protected against interfering thoughts and actions within game play, such as receiving unpleasant information feedback. Anshel (1990), Anshel et al. (1990), and Anshel et al. (1993) each found decreased negative effect and improved sports performance following the intervention in tennis, baseball, and dart -throwing. Avoidance coping was associated with less state anxiety after making performance errors, in comparison to the use of approach coping. Research findings show approach coping is particularly important in tasks classified as continuous and open, that is, in which task demands are externally imposed (Anshel et al. 1996). Apparently then, coping effectiveness in sport is a function of task and situational demands (Anshel and Anderson 2002). In open sports like basketball where there is constant continuous game flow and action,

athletes will use both styles of coping depending on situational need and time that is available for reactions.

The main purpose of this study was to examine the fear of failure and coping strategies of collegiate female athletes. Secondly, personal interviews were conducted to determine if athletes used approach or avoidance coping strategies.

Methods

Participants

Participants were 37 female athletes (8 basketball, 3 cross country/track and field, 4 soccer, 5 softball, 9 track and field only, 6 volleyball, 2 golf) enrolled in a Division 1 University located in the Midwest of the United States. Based on athletic status at the start of the study, 8 participants were considered red-shirt freshman, 10 as freshman, 9 as sophomores, 4 as juniors, 6 as seniors, and 4 as fifth-year seniors. All participants were active members of their squads.

Procedures

Prior to the beginning of data collection, approval was obtained from the University Institutional Review Board (Protocol #IRB0003501). Approval was also obtained from an athletic director and from the various head coaches. After all approvals were obtained, the survey inventories were uploaded to Qualtrics and made available to participants. All female athletes playing varsity sports received an email inviting them to participate in the study. If they agreed to participate, they would open the link on the email which took them to the Qualtrics survey. When they opened the survey, they next had to agree to informed consent. If they agree, they had access to the survey. Three separate emails were sent to athletes inviting them to participate. All participants were informed that their participation was voluntary and that all interview material was confidential. Data were collected in two phases. Phase 1 collection was via quantitative methodology (survey) and occurred during spring semester, 2021. Phase 2 used qualitative methodology (interviews) and occurred during fall semester, 2021.

Phase 1: Quantitative Data Collection

Quantitative data were collected via two separate inventories. The Performance Failure Appraisal Inventory (PFAI; Conroy et al. 2002) was employed to measure dimensions and levels of fear of failure among the players. The measure consists of 25 items measuring beliefs associated with aversive consequences of failure. It has five subscales capturing: fear of experiencing shame and embarrassment (7 items; e.g., “When I am failing, it is embarrassing if others are there to see it.”), fear of devaluing one’s self-estimate (4 items; e.g., “When I am failing, I blame my lack of talent.”), fear of important others losing interest (5 items; e.g., “When I am not succeeding, people are less interested in me.”), fear of upsetting important others (5 items; “When I am failing, people who are important to me are

disappointed."), and fear of having an uncertain future (4 items; e.g., "When I am failing, it upsets my 'plan' for the future."). Players were asked to rate how strongly they believed each consequence was likely to occur after failure (i.e., "Please indicate how often you believe each statement is true for you in football."). Responses were recorded on a 5-point scale from 0 (*do not believe at all*) to 4 (*believe 100% of the time*). Scores were computed for each subscale of the PFAI. An overall fear of failure score was also computed.

The Athletic Coping Skills Inventory (ACSI; Smith et al. 1995) was also used to capture information related to athlete coping skills. The ACSI-28 scale measures the coping skills level among athletes and has been shown to be a viable measure for assessing coping skills (Hidrus et al. 2016). It is composed of 28 items and seven subscales. The seven subscales are: coping with adversity (e.g., "When things are going badly, I tell myself to keep calm, and this works for me."), peaking under pressure (e.g., "To me, pressure situations are challenges that I welcome."), goal setting/ mental preparation (e.g., "On a daily basis, I set very specific goals for myself that guide what I do."), concentration (e.g., "When I am playing sports, I can focus my attention and block out distractions."), freedom from worry (e.g., "When competing, I worry about making mistakes or failing to come through."), confidence and achievement motivation (e.g., "I feel confident that I will play well."), and coachability (e.g., "If a coach criticizes or yells at me, I correct the mistake without getting upset about it."). Each of the subscales equally constitutes four items that are measured by a 4-point Likert scale ranging from 0 (almost never) to 3 (almost always). There are six items that are reverse items where higher scores reflect lower coping (items # 3, 7, 10, 12, 19, 23), and the remaining items are higher scores that reflect a high level of coping. A score for each subscale can range from 0-12 and the summation of all scores creates a value ranging from 0-84. Higher scores indicate the ability to cope with the demands of the sport with greater psychological skills (Beckford et al. 2016).

Phase 2: Qualitative Data Collection

Interviews were used to collect qualitative data. One investigator was present for every interview. Time and pace of interviews were scheduled via email with the interview participants and interviews were then conducted in a room dedicated to qualitative research. No participants refused to answer any questions during the interviews. Questions (Figure 1) explored participants' experiences regarding failure, success, and coping in the particular sport. The interview guide was followed as closely as possible. The duration of the interviews ranged from 20 to 30 minutes. The interviews were recorded using Yuja and automatically transcribed verbatim via Word.

Figure 1. *Interview Questions*

1. **Background** - Tell me a little bit about your-self.
   - Specific character for you.
   - Sport.
   - Sport experiences.
     - For how long, this specific sport and total.
     - Different sports.

2. **Controllable fails**
   - How do you define controllable failures in your sport?
   - What are examples of controllable failures ?
   - Coping responses for controllable failures.

3. **Uncontrollable fails**
   - How do you define uncontrollable failures in your sport?
   - What are examples of uncontrollable failures?
   - Coping responses for uncontrollable failures.

4. **Define success**
   - Feelings.
   - Effects positive and negative.
   - Consequences
   - Are success and failure important for you in sport?

6. **Define failure**
   - Feelings.
   - Effects positive and negative.
   - Consequences
   - Are success and failure important for you in sport?

7. **Coping Mechanisms**
   - In what ways do you prepare before a competition?
   - In what ways does your coach help you to deal with situations where you
   - feel the need to cope?
   - Identify coping strategies that you use.
   - What help do you have from other peoples?
   - Do you think that this interview is about something that you believe is relevant and important for the sport?
   - Debriefing and other questions.

Data Analysis

The PFAI and ACSI were analyzed via SPSS (version 27) for descriptive statistics (means and standard deviation) to identify players' levels and dimensions of fear of failure and coping skills. Independent t-tests were used to make comparisons between team and individual sport athletes and between upperclassmen and underclassmen. The interviews were transcripted by one of the investigators.

The second investigator analyzed each transcribed interview. After analyzing each interview, the subjects reviewed the analysis for accuracy and meaning.

Results

Quantitative Results

Descriptive statistics for the five subscales of the Performance Failure Appraisal Inventory (Form A) for the entire sample showed that fear of experiencing shame and embarrassment was the highest fear (M=3.27, SD=0.80), followed by fear of upsetting important others (M=2.77, SD=0.89), fear of devaluing self-estimate (M=2.71, SD=0.83), fear of important others losing interest (M=2.58, SD=0.91), fear of devaluing one's self-esteem (M=2.71, SD=0.83), and fear of having an uncertain future (M=1.01, SD=0.90). The general fear of failure score, which tabulated all five subscales, indicated a M=2.44, SD=0.67 (See Table 1).

Table 1. *Summary of PFAI scores*

Subcategories	Minimum	Maximum	Mean	Std. Dev.
Feat of Shame and Embarrassment	1.42	4.85	3.27	0.80
Fear of Devaluing Self-estimate	1.25	5.00	2.71	0.83
Fear of Uncertain Future	-0.50	2.75	1.01	0.90
Fear of Important Others Losing Interest	1.00	4.60	2.58	0.91
Fear of Upsetting Important Others	1.20	4.20	2.77	0.89
Overall PFAI	1.09	3.82	2.44	0.67

Descriptive statistics for the seven subscales of the Athletic Coping Skills Inventory for the entire sample showed that coachability had the highest score (M=10.06, SD=1.51), followed by confidence and achievement motivation (M=8.63, SD=1.74), goal setting and mental preparation (M=7.54, SD=2.98), concentration (M=7.09, SD=1.75), coping with adversity (M=6.9, SD=1.82) and peaking under pressure (M=6.9, SD=2.62), and freedom from worry (M=5.6, SD=3.02). The overall athletic coping skills score was (M=52.06, SD=9.39) (See Table 2).

Table 2. *Summary of ACSI Scores*

Subcategories	Minimum	Maximum	Mean	Std. Dev
Coping with Adversity	4	11	6.90	1.82
Coachability	6	12	10.06	1.51
Concentration	2	11	7.09	1.75
Confidence and Achievement Motivation	5	12	8.63	1.74
Goal Setting and Mental Preparation	2	12	7.54	2.98
Peaking Under Pressure	2	12	6.90	2.62
Freedom from Worry	0	12	5.60	3.02
Overall ACSI	37	76	52.06	9.39

Comparisons were also made based on athlete status (underclassman vs upperclassman) and by team status (team vs individual). Based on athlete status, a significance difference (p=0.05) on the PFAI inventory was found for fear of shame and embarrassment (under 3.5 mean, upper 2.89 mean, p=0.02), fear of uncertain future (under 1.26 mean, upper 0.60 mean, p=0.02), and overall score (under 2.61 mean, upper 2.15 mean, p=0.03). For all of these categories, upperclassmen were less likely than underclassmen to describe themselves as feeling fear of shame and embarrassment, fear of an uncertain future, and overall score. On the ACSI inventory, a significance difference was found for freedom from worry (under 4.8 mean, upper 6.84 mean, p=0.05). Freedom from worry assesses whether an athlete puts pressure on herself by worrying about performing poorly or making mistakes. Scoring on this category is reversed so a higher score indicates a greater strength. As indicated, upperclassmen are free from worry more than are underclassmen.

Based on team status, no significant differences were found between team vs individual sport athletes on the PFAI inventory. On the ACSI inventory, a difference was found for peaking under pressure (team 7.84 mean, 5.66 individual mean, p=0.02). This finding indicates that team sport athletes, more so than individual sport athletes, feel challenged rather than threatened under pressure situations and perform well under pressure.

Qualitative Results

Interviews were conducted with four athletes who volunteered to be interviewed. Tables 3 and 4 show the individual PFAI and ACSI scores for each of the interviewed athletes. Overall, athletes 1 and 2 had more positive PFAI and ACSI scores then did athletes 3 and 4.

Table 3. *Summary of PFAI Scores for Interviewed Athletes*

Subcategories	**Athlete #1**	**Athlete #2**	**Athlete #3**	**Athlete #4**
Feat of Shame and Embarrassment	2.14	3.10	4.17	4.85
Fear of Devaluing Self-estimate	1.75	3.30	3.50	3.75
Fear of Uncertain Future	0.50	0.80	2.50	2.75
Fear of Important Others Losing Interest	1.80	1.60	3.40	3.80
Fear of Upsetting Important Others	1.40	2.40	4.00	3.80
Overall PFAI	1.51	2.20	3.62	0.3.79

Table 4. *Summary of ACSI Scores for Interviewed Athletes*

Subcategories	Athlete #1	Athlete #2	Athlete #3	Athlete #4
Coping with Adversity	7	8	6	7
Coachability	12	10	10	9
Concentration	7	7	8	7
Confidence and Achievement Motivation	10	9	10	6
Goal Setting and Mental Preparation	4	9	12	6
Peaking Under Pressure	8	10	3	4
Freedom From Worry	8	2	0	3
Overall ACSI	56	55	49	42

For each athlete individually, we present their brief responses to the interview questions concerning success and failure, controllable and uncontrollable failure, and coping mechanisms.

Athlete #1 - During the time of the interview, athlete #1 was a sophomore track and field athlete (hurdler). As a high school athlete, she placed in the top 4 at the state track and field meet in two events as a sophomore, junior, and senior. A multi-sport athlete, she also competed in hockey and lacrosse, and cross-country during freshman year. As a freshman in college, she placed 6th individually in the league championships and was a member of a relay team that set a school record.

Athlete #1 described success as "feeling like I could run forever and I'm like dead, but I feel like I could run. Just keep doing it and it feels awesome….. I just feel so happy like everything kind of came together." She said that having success gave her confidence and self-efficacy increased. She described failure, "like anger, and I lose a lot of self-confidence and doubt myself." A positive effect of failure is wanting to work harder, not make that mistake again, or having a drive to not do that again. Another positive effect of failure is that it shows people, especially young athletes, that everyone makes mistakes and that it is okay that you made a mistake. She stated that an oblivious consequence of failure is not winning but also that one can now hone in on the mistake in practice and hopefully not make that mistake again.

With a controllable failure, she stated that "she watches video of herself, talks through what could have been done differently in terms of technique, and then focuses on that in practice and hopefully it doesn't become a failure again." She also suggested having a short memory and getting over it quickly. In terms of uncontrollable failures, she said she still gets mad because she puts a lot of pressure on herself to do well, and when she does not do well, even if it is because of the wind or something else, she still gets upset. However, she said that she focuses on what she can control vs the uncontrollables and looks to her teammates to pick her up and help her move on.

Athlete #1 prepares for her competition by sitting in her room imagining what to do correctly and sometimes watching videos of practice with her coach explaining how to do something. Sometimes she likes to get to the meet early to let her nerves go away because when she gets to the track, she is super excited and anxious. She said that watching other people helps her relax and then she warms

up to get mentally focused. She likes to talk to her coach and other people to just get ready and then once she actually has to get to the blocks, she just makes a straight face. She indicated she doesn't ever remember the races because she is in flow. She said she just kind of blacks out and does not hear anyone either.

Her coach helps her deal with stressful situations in that he is big on communication and tends to know all of the athletes' tendencies, what they like and what they do not like. She said that one of her coping strategies is messing with her hair, "It's like I get my mind off the thing that might be stressing me out and trying to be positive instead of negative."

Athlete #2 - During the time of the interview, athlete #2 was a sophomore soccer athlete (goalkeeper). In high school she was a three-year varsity starter, team captain, and all-conference. As a collegiate freshman she started four games and redshirted this year. Soccer is the only sport she has played throughout the course of 14 years.

Athlete #2 described success as "relief, if I make a great save, or if I make a good pass, it's relieving because I know I'm making my teammates look good as well as I'm making the program look good." She described failure as "depression, it's one of those things where you get mad and then you just move on because you don't really have time to dwell on it. But definitely, some feelings I get are, I let the team down or I let the coaches down or I let the program down. I made it look bad so you put all the blame on yourself, even though it's a team sport, you feel all the blame just comes down on you for being the goalkeeper. You know a lot of people remember the goals scored but don't remember the goals that were saved. If I mess up, my mistake is a goal, but if somebody else messes up it's just a giveaway."

She indicated that a negative of success is a feeling of cockiness and getting comfortable while a positive of success is the reward you get from working hard. Regarding failure, she said that learning cannot succeed without failure. You look back at your film, look at your mistakes, and fix them so they do not happen again. The negative of failure is not having happy coaches. She said, "You're not performing the way you want to and it's very frustrating. I'm frustrated because I feel like I should be able to get everything, but I don't, so I always feel frustrated. If you fail so many times, it's really easy to just lay down and die after failure after failure after failure and I would definitely say that was a huge consequence of this season. It's like our team mentality, we're going to hope that we show up today, oh well, I guess I'm just going to fail again."

To manage controllable failures, such as giving up a goal, athlete #2 said, "once we get scored on, we always go in a huddle and in our huddle we kind of talk about what is the breakdown that happened? How do we fix it? And then we try to move on from it." For an uncontrollable failure, such as fouling, she said, "I kind of get angry because I don't like when people push me. Makes me so mad. I'm like there's no need for it. But I kind of just shake it off and I'm great, just keep playing. You have like three seconds to be mad and then you get over it."

One of her coping strategies is to tell herself to get mad or if a stressful situation is about to happen, to take a deep breath. Before competition she copes by using music. She indicated that she likes to be hyped and likes to be dancing around the locker room getting her teammates hyped up. As for the mental side,

she talks to people, coaches, or a sports psychologist. If she needs an outside view, she will talk to one of her friends. In stressful situations she also goes to her coaches. With one of the assistant coaches, she talks more about her personal life and with another she talks about the technical aspects of her position as a goalkeeper.

Athlete #3 - During the time of the interview, athlete #3 was a freshman cross country and track and field athlete (distance). As a high school cross country athlete, she placed in the top 30 at the state cross country meet in five of her six years of competing. She was a multiple-time state track meet qualifier, and also swam competitively during high school.

Athlete #3 described success as "really being confident when you are going to practice or competitions and being confident that you are going to do well." Failure, she says, is when you are not succeeding and feel loveless and a lot more nervous about going to compete. She said when you fail you feel disappointment. She described the positive effects of success as reinforcement that you are training correctly and that the coach is helping you not overtrain. Closely related to that, she stated is that success "helps reinforce that you are doing a good job in your sport, knowing that it's correct and has been correct for the amount of time spent in the sport." She described the negative effect of success as having a target on your back.

Athlete #3 described a controllable failure as "pushing past the point where you can't run, I would say that's kind of a failure that you could have controlled." She also mentioned not taking rest days and not hitting your mileage. She described an uncontrollable failure as a freak accident in which she fell during a race, and in other sports, the referees and fouls. To cope with both types of failure she mentioned talking to her coach, sport psychologist, or teammates. She indicated that it was harder to deal with uncontrollable failures because you do not really have anything to blame it on. She said, "it's just what happened."

She stated that her coach helps her deal with situations that are more stressful or she needs to cope a little bit more, through individual meetings. They talk through the steps, "that race was really ****, what do we do next time, why we thought it went bad, and then looking forward to what can be done better." A personal coping strategy she likes to use is visualization. She said, "Obviously, you want to visualize how you want the race to go, but that's not very likely. Visualizing what you will do when certain situations arise, and how you respond to that. So, you're prepared in the moment, and that's really helpful."

Athlete #4 - During the time of the interview, athlete #4 was a junior softball athlete (catcher/outfield). As a high school athlete, she was two time all conference in both softball and ice hockey and also participated in cross country. As a collegiate athlete she had limited playing time as a freshman and sophomore.

Athlete #4 said, "once you have success you just get motivated to continue that success and I'm more driven to capture that feeling of happiness, enthusiasm." She indicated a positive effect of success is getting awards, like championship rings, but a negative effect is the expectation to continue succeeding. She said, "you have to reach that potential again and again and it can be really hard to continue to produce those successes." A consequence of success is thinking that

you might be better than what you really are and that you do not have to work at it anymore like you did when you succeeded. She said once you get complacent you don't get better or you even work backwards.

Athlete #4 described failure as feeling shame or embarrassment, especially if you are in front of your teammates, "disappointment in myself in the fact that I let my teammates and coaches down." She stated that a negative effect and consequence of failure was a lack of confidence, a decrease in performance, and a loss of playing time. A positive effect of failure is learning from it. When you succeed you do not necessarily learn, you just kind of go, "that felt good, that was cool". When you fail, you break down each thing that happened and see where the failure started so you really learn from it, and get better and succeed.

Athlete #4 said she copes with controllable failures by practicing more and doing more reps relative to physical failures, and for mental failure, like throwing the ball to the wrong base, she would talk about it and write it down. She described an uncontrollable failure as not making solid contact when batting because even though you can have perfect mechanics and perfect timing, the pitcher can put a certain spin on the ball and you still do not hit it. She also mentioned being super windy outside as an uncontrollable failure when perhaps someone hits a homerun with the wind blowing out. When asked how she coped with uncontrollable failures she said, "almost the same as the controllable failures. Just taking more reps to see the controllable failure again. So, you then kind of think, this might happen and it's OK if it happens and also just talking to teammates about it and just kind of accepting that."

In terms of coping strategies, on game days she goes through the game and the warm up in her head and imagines herself doing good things. When she gets to the field, they have a routine they do, such as hitting defense. She said she tries to do the same thing every time, like putting her cleats on at the same time and tucking her jersey in the same way every time. She said her coach slows things down and he does not necessarily deal with it in the middle of competition, he usually waits until after the game. At that point, he tries to walk you through the situation saying things like, "what were you thinking, what did you feel during that, what did you feel like mentally and emotionally, and how can we fix it?"

She stated that when things are not going well, her main coping strategy is focusing on her breathing, taking a couple of deep breaths in the moment just to reset and relax. Taking time to focus on something else besides the failure that just happened and then resetting from that point.

Discussion

Learning more about the mental preparation for success and failure within athletes will aid in more successful training and mentorship for coaches, parents, and others who support athletes as they grow and evolve. Athletes cope with failure in a variety of ways, and coping styles and strategies can dictate how an athlete will respond to failure situations.

The PFAI was analyzed to identify players' levels and dimensions of their fear of failure. Generally speaking, the female athletes in this study indicated their fear of experiencing shame and embarrassment as their greatest performance failures. This was followed by the fear of upsetting important others and fear of devaluing one's self-estimate. Additionally, the fear of shame and embarrassment and fear of an uncertain future were experienced more by underclassmen than by upperclassmen. Statements within the subcategory of shame and embarrassment include: When I am not succeeding, 1) I am less valuable than when I succeed, 2) I get down on myself easily, and 3) my value decreases for some people; and When I am failing, 1) it is embarrassing if others are there to see it, 2) I believe that everyone knows I am failing, 3) I believe that my doubters feel they were right about me, 4) I worry that others think I may not be trying.

A number of researchers (Anthanas 2007, Sagar at al. 2010, Sethu 2016, Wilt 2016) have used the PFAI inventory in previous studies. Anthanas (2007) studied the fear of failure with fencers and reported that fencers' experience of precompetitive cognitive anxiety was partially dependent on individual difference in fear of failure. Sagar at al. (2010) studied the fear of failure and coping responses of adolescent male soccer players. They reported that fear of experiencing shame and embarrassment followed by the fear of an uncertain future had the highest scores of the subcategories. Subjects also stated that the fear of failure affected their sporting performance and interpersonal behavior. Further, they reported using effective coping strategies to deal with their fear of failure. Sethu (2016) researched the performance of university men and women volleyball players. He concluded that a significant difference exists between men and women volleyball players on selected performance failure appraisal such as fear of experiencing shame and embarrassment, fear of devaluing one's self-estimate, and fear of having an uncertain future. Wilt (2016) studied the fear of failure and competitive anxiety in female runners. She found a significant relationship between fear of failure and the intensity of cognitive anxiety.

ASCI refers to an athletes' ability to be open to and learn from instruction; while accepting constructive criticism without taking it personally or becoming upset (Beckford et al. 2016). Athletes in this study indicated their greatest ASCI strengths were coachability followed by confidence and achievement. The lowest strength for all athletes, and for underclassmen was freedom from worry. Inventory statements that indicated worry include 1) I worry quite a bit about what others think about my performance, 2) I put a lot of pressure on myself by worrying about how I will perform, 3) While competing, I worry about making mistakes or failing to come through, and 4) I think about and imagine what will happen if I fail or screw up.

Numerous researchers have used the ASCI inventory when studying athlete coping and sport performance. For example, Tara et al. (2018) studied coping skills related to archery performance, Jones (2011) studied mental toughness of intercollegiate athletes, Kimbrough et al. (2008) studied collegiate baseball in an attempt to predict performance, Bila and Hillman (2021) studied anxiety and confidence in short-passing in collegiate soccer, and Beckford et al. (2016) studied mental toughness and coping in male sprinters.

From these studies, and others, it has been suggested that to achieve success, certain psychological skills, principally confidence and achievement motivation, concentration, and coping with pressure during competition, are necessary (Tara et al. 2018); that significant relationships were found between mental toughness and coping strategies for the athletes (Romanova 2021); that anxiety levels seemed to affect athletes of lower skill level more than higher skilled athletes and that high self-confidence enhances performance and has a positive effect on athletes' thoughts, feelings, and behaviors (Bila and Hillman 2021); that elite compared to sub-elite sprinters had a higher ACSI score, that both groups noted coachability as their strongest asset and freedom from worry as their weakest coping asset (Beckford et al. 2016); and that with youth athletes, males scored higher on all subcategories and overall than did females (Gábor et al. 2009).

It is difficult to extrapolate findings from previous research to this current study in that there are many noted differences in age of athletes, skill level of athletes, country where the data was collected, and type of sport studied. Bedi et al. (2020) work perhaps comes closest to this current study in that the population was strictly female and included university level athletes. In that study it was found that university level female athletes listed coachability as their greatest coping strength and fear of freedom of worry as their weakest coping strength. That was the same as this current study. In fact, the overall ACSI for the athletes in both studies varied by only 0.3 points.

Four athletes were interviewed, two of them (athletes #1 and 2) scored higher on the two inventories and two (athletes #3 and 4) scored on the lower end of the inventories. That being said, two of them (3 and 4) had a greater fear of failure than the other two and had overall weaker coping skills. Athletes in this study responded similarly to those reported by Haglind (2004) when describing how they cope with failure. For example, they analyze what happened, turn away negative thoughts, discuss things with other people, realize that failure is just a part of the circle, and utilize their social connections.

All four of the athletes' found value is completing the inventories and learning of their responses. Athlete #2 said, "I would definitely say that having athletes recognize how they cope with failure and with success is very important. Asking 18 – 21-year old's to be self-aware of what's going on is a very hard thing. What are some things I cope with? What are some things that help me? I think it was very important to hear."

Implications for Athletes

Research has suggested that self-compassion may be helpful to athletes in order to manage failures within competitions. Athletes are held to the highest standards when they fail to meet the standards of performance levels, and often endure the consequences of failing to meet expectations that are set just as high. Mental failure is common for athletes, the criticism and consequences that athletes experience when they fail, combined with the pressures of expectations to be "mentally tough" in the face of challenges make experiencing and coping with failure challenging for athletes (Ceccarelli et al. 2019).

The stress that athletes encounter when feeling failure becomes compounded and exaggerated by their tendencies to respond to failure with negative reactions of self-criticism and judgment. These types of reactions take a physical and mental toll on an athlete and can negatively impact one's moving forward. Self-compassion has been positively associated with the ability to accept, tolerate, and experience negative emotions rather than avoid or suppress those feelings. Self-compassion has also been negatively associated with avoidance, thought suppression, and rumination which can have deteriorating effects on our psychological systems (Ceccarelli et al. 2019). Being able to give personal grace can help tremendously in the recovery process of returning to a high level of performance.

Self-forgiveness is a frequently constructive approach to coping with competitive performance failure in a manner that promotes self- development and well-being (Cowden and Worthington 2019). Athletes are often at least partially responsible for failing to meet their performance expectations and acknowledgement of such is key to genuine self-forgiveness. Genuine self-forgiveness – falling between self-punishment and self-exonerations - acknowledges an athlete's role in the sport failure (Cowden and Worthington 2019). Taking personal accountability is a way to take ownership within the coping process. By accepting appropriate responsibility for their role in competitive performance failures, athletes expose their weaknesses and admit their mistakes. This acknowledgement can be an emotionally uncomfortable experience. By stepping into this role and taking responsibility, athletes increase the likelihood of adaptively using the information associated with the failure to determine and embrace areas in which they can technically, strategically, or psychologically improve (Cowden and Worthington 2019). It looks like taking a step back, owning the fault, and applying that fault to provide guidance into the future. When used consistently, self-forgiveness can be a tool to unlock individual learning and growth in the skill of the learning athlete.

Self-compassion and self-forgiveness go hand in hand with how athletes can treat their mental state instead of bringing more negativity into the space of failure. How do athletes learn these skills? There is very little research on the training of self-compassion or self-forgiveness in sport and how the use of these skills impact athlete's responses to failure. Supplying athletes with a set of skills or actions that can be directly applied to help foster learning these skills will positively impact their response time to failure, and their mental perception on the experience of failing. This is critical to understanding the failure response and recovery of athletes and how the process can be positively affected and improved for future stressful or failure prone situations.

Implications for Coaches

Research on athletes, stressors, and coping styles is vast and extensive. On the other side, coaches and their stress management and coping reactions have very little research to compare and contrast. Relatively little is understood about the factors that might contribute to the coping strategies adopted by coaches (Laborde et al. 2017). Usually, coaches are used to understanding the athletes' coping

process and their influence on how the athlete handles stress, or when coaches are asked about how well the athlete is able to cope with stress.

In this study, the findings shed light on differences of athletes and their coping strategies. In further research, coaches should be studied in their own category, as the strategies from athletes may not be a true fit for the coaches' strategies of coping. In comparison to athletes, the main coping responses that coaches exhibit include mastery (controlling the situation and eliminating the stressor), internal regulation (managing internal stress responses), and goal withdrawal (ceasing efforts towards goal attainment) (Laborde et al. 2017). Personality is a base indicator of how a coach will respond (Berger 2013). Similar to athletes, the coping responses and strategies of coaches are on an individual basis and can look different from person to person (Olusoga et al. 2010).

Coaches also have the maturity to evaluate their stressors and think about how it will affect their players as well as themselves. Some research has shown that coaches use techniques to alleviate stress that athletes do not use. Structured planning, rationalization, self-talk, using proactive behaviors, and relaxation are some of the techniques that coaches use (Olusoga et al. 2010). Coaches should look to pass these skills on to the athletes they work with and help teach them to cope in stressful situations. Coaches seem to be more aware, from previous experience, of situations that could warrant a negative stress response, and actively take steps to reduce the possibility of the situations occurring, or for a coach to become overwhelmed (Olusoga et al. 2010). How do coaches foster the growth and awareness that they use on themselves in stressful situations to help their athletes build habits and grow with their coping responses to stress and high-pressure situations? More research is necessary to connect coaches and athletes' responses to stress and how they are related.

Conclusions

Being able to actively and effectively cope, whether it is approach or avoidance style coping, calls for athletes to be versed in how to react to stressors and failure. Having a failure response plan can effectively speed up the coping process and in turn, create a better opportunity for optimum performance. Clarification is necessary to determine whether approach and avoidance coping styles are a function of a person's thoughts, emotions, and sensations relating to an internal stimulus, or if it reflects external input that has common situational characteristics (Anshel 1996). Anshel's continued study explores the nature of flipping between both coping styles. Anshel showed that coping style is one component of a person's response to acute stress. Each stressor was proven to be independent of each other. Clearly, some stressors appear to be more predictive of coping style than others, suggesting that coping style is partly a function of specific, stressful situations (Anshel 1996).

Research where studies examine the planned strategic responses to failure have yet to be discussed or largely studied and provide room for growth in the topic of failure responses. Being able to give athletes a tool kit or blueprint that can

be put into practice immediately as the failure or stressful situation occurs advances how athletes respond to failure and the pace at which an athlete can return to optimum performance. Researching if athletes who have a failure response plan in relation to how other athletes, who may not have a failure response plan, and the differences between return to performance or overcoming failure, advances the field of mental sports preparation. Another area of growth is comparison of gender, race, and socio-economic backgrounds and how these factors affect an athlete's response to failure and how a failure response plan may or may not benefit the return to optimum performance levels within competition.

More research is necessary on how athletes successfully respond to failure in order to further support struggling athletes. Whether or not athletes and coaches have a plan of action when failure strikes are also worthy of research in order to understand the mental roadblocks in athletes and how they can improve their individual responses to failure in their futures and how their coping styles can be used for success.

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