

The Influence of Athlete Feedback Orientation on Continued Sport Participation

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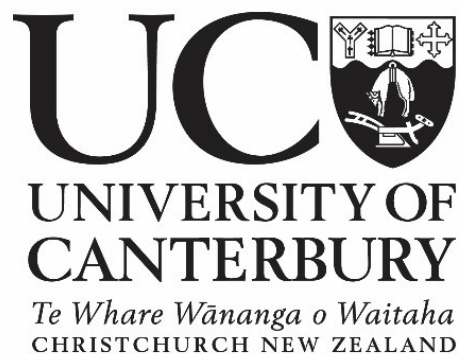


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Abstract

Purpose - The purpose of the current study is to examine the influence of athlete feedback orientation factors on continued sport participation.

Design/methodology/approach – This study employed a three-phase within-subject design, that is data was gathered from the same participants, by way of three online surveys, at three separate points in time. The respective sample size at each time point was 245 (T1), 101 (T2) and 75 (T3). The hypotheses were empirically tested using partial correlations, and linear regression analyses.

Findings – Results build upon the current understanding of continued sports participation, revealing a positive association overall feedback orientation and feedback self-efficacy (dimension of feedback orientation) with continued sports participation, as measured by intention to continue and continuation behaviours.

Research limitations – While the three-phase time-lagged nature of this design does not fully mitigate the limitations commonly linked with cross-sectional designs, it does substantially control for these risks.

Practical implications – In addition to targeting athlete enjoyment and perceived competence, sporting organisations and coaches concerned with retaining athletes in sport should seek to implement interventions and coaching methods which are tailored to individual differences in feedback orientation, and those which target development of overall feedback orientation and feedback self-efficacy.

Originality/value - This study may be the first to explore feedback orientation in a sporting context, and is likely the first to examine the influence of feedback orientation on continued sports participation.

Introduction

Overview

It is widely acknowledged that sport participation leads to significant positive outcomes, both at an individual and societal level. Within a New Zealand context, findings show the broad benefits of sports participation to include increased individual physical and mental health, economic value, positive educational outcomes, and increased social cohesion (Angus & Associates, 2017; Crosnoe, 2002; Wang et al., 2004). New Zealand's national sporting bodies also consider sport participation to be a critical component of remaining globally competitive (Sport New Zealand, 2016). Their belief being that the greater the levels of participation, the greater the competition and, consequently, the greater the talent pool, both in skill level and number from which to select national teams (Green & Oakley, 2001). Alarming for society and said sports associations, the number of adults aged over 18 participating in sport or active recreation is in decline. In a longitudinal study of New Zealand adult sport participation, national weekly sport participation was found to have decreased by 7.7 percent over a 16-year period (Sport New Zealand, 2016). Furthermore, there is evidence that sports club membership had decreased by 11.1 percent over the same period (Sport New Zealand, 2016). The question addressed by this dissertation is whether or not there is a link between participation and an athlete's receptivity to feedback.

Contemporary sports and health literature has primarily focused on sports participation and dropout (attrition), the antecedents (see – Enoksen, 2011) and the respective benefits or consequences (see – Oja et al., 2015). There are countless reported antecedents to sports dropout, that is factors which are known to act as barriers to participation and/or that influence an athlete's decision to continue participating in sport (Coakley & White, 1992, Ulrich-French et al., 2012). A lack of enjoyment and low perceived competence, for example, have both been

found to negatively influence athletes' continuation in sport (Zanatta et al., 2018). In an attempt to frame the antecedents to continued sport participation, several explanations have been theorised, however, perhaps the most popular approach is the use of motivation theories (see - Weiss & Chaumeton, 1992; Sarrazin & Guillet, 2001). The construct, motivation refers to 'the internal and/or external forces that produce the initiation, direction, intensity, and persistence of behaviour' (Vallerand & Thill, 1993, p. 18). In accordance with this description, the acts of playing a sport, continuing to participate in sport, and choosing to withdraw or drop out of sport, can all be classified as forms of motivated behaviour (Allen & Howe, 1998). There is a substantial collection of research which suggests motivation plays a central role in predicting continued sports participation (Biddle et al., 1999; Pelletier et al., 1995; Sarrazin et al., 2002). One motivation theory that is particularly well suited to the study of sports participation is Deci and Ryan's (1985, 1992, 2000) self-determination theory (SDT) (Calvo et al., 2010). Based on SDT many researchers posit that it is largely an athlete's intrinsic motivation which determines whether or not they will choose to continue in sport (Calvo et al., 2010).

Within the body of motivation-focused sports participation literature, coach behaviours and more specifically coach feedback, are heavily reported as significant influencers on athlete motivation to continue in sport (Amorose & Anderson-Butcher, 2007). Despite this, few studies have gone beyond investigating and identifying the dimensions of coach feedback, and the impact of each on continued sports participation. To the author's knowledge, no consideration has been given to athlete individual differences regarding receptivity to feedback. Though, in an organisational context the ability to cater to individual feedback receptivity has been viewed as crucial to the effectiveness of the feedback process and for retaining talent (Linderbaum & Levy, 2010). Feedback orientation (i.e. an individual's overall receptivity to feedback) is as an individual difference variable that is receiving increasing attention in an

organisational context, with studies indicating that individuals with higher levels of feedback orientation are more likely to perform, be satisfied in their role and feel motivated to stay in the organisation (Linderbaum & Levy, 2010).

The current study seeks to address the *receptivity to feedback* gap in the sports participation literature by examining feedback orientation in a sporting context, to determine whether, and how, feedback orientation influences continued participation in sport. While coaching has been identified as a key factor for retaining athletes in sport (Hyun-Duck & Cruz, 2016) and organisations commonly target coach behaviour (i.e. feedback delivery) in an attempt to retain players, it is reported that an individual's feedback orientation, although relatively stable, can be altered (Linderbaum & Levy, 2010). Thus, understanding the influence of this individual difference on sport participation may allow sports organisations to identify approaches which cater to these differences and positively influence continued sports participation.

In the following section an overview of self-determination theory is provided, followed by a discussion of the relationship between coach behaviour, and feedback, and continued sports participation. The subsequent hypothesised influence of feedback orientation on continued sports participation is then discussed, followed by a justification for the use of intention as a measure of continued sports participation. Finally, an overview of the current study and the hypotheses tested is given.

Self Determination Theory Overview: In the Context of Sports Participation

Notably, within the SDT and sports participation-related literature it is asserted that the social context, as created by coaches and other influencers, directly affects an athlete's needs satisfaction and, consequently, accounts for a significant portion of the variability in an athlete's intrinsic motivation and desire to continue participating in sport (Duda, 2001; Ryan & Deci, 2000).

Based on the development of human potential, self-determination theory (SDT) seeks to explain why people participate or engage in activity and, moreover, what it is they want to achieve by doing so (Calvo et al., 2010). Where SDT is concerned, a continuum of self-determined behaviour exists along which the motivation behind an individual's choice to participate in sport, expend effort, and persist in sport, are categorised (Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). At one end of the continuum is amotivation, controlled and more extrinsic (instrumental) motivation, and at the other end is self-determined, autonomous and more intrinsic (enjoyment) motivation (Ryan & Deci, 2000). Self-determined motivation is said to result in positive behaviours, attitudes and performance outcomes, while the opposite is true for non-self-determined motivation (Van den Broeck, Ferris, Chang, & Rosen, 2016). Extrinsic motivation is broadly defined as the engaging in activities so as to gain an external reward or avoid punishment. Within the continuum model, extrinsic motivation is separated into the following four types of regulation: external, introjected, identified, and integrated (Deci & Ryan, 2012). External and introjected regulation are the least self-determined types of extrinsic motivation and are aligned with controlled motivation, whilst identified and integrated regulation are more self-determined and aligned with autonomous motivation (Deci & Ryan, 2012).

The term intrinsic motivation is typically used to describe the concept of an individual engaging in a behaviour or activity purely for the satisfaction and enjoyment that is gained from doing so. Central to SDT is the idea that the satisfaction of three psychological needs: autonomy, competence and relatedness, leads to high levels of motivation and motivations which are more likely to be intrinsic and self-determined (Van den Broeck, Ferris, Chang, & Rosen, 2016). That is, individuals are more likely to be motivated, and intrinsically motivated (i.e. freely choose), to continue participating in sport when their experiences playing the sport satisfy their needs for competence, autonomy and relatedness. Deci and Ryan (1985) describe the need for competence as the need to feel effective in our behaviour, while the need for relatedness refers to the desire to be connected with others, and lastly, the need for autonomy represents the need to experience psychological freedom of choice when engaging in behaviours. Sports participation that satisfies an athlete's needs for competence, relatedness and autonomy will be enjoyable, satisfying and intrinsically motivating and, consequently, likely to result in the athlete freely choosing to continue participating (Calvo et al., 2010).

In some cases, athletes might choose to continue participating in sport despite these needs not being fulfilled, the motivation to do so however will not be intrinsic but rather a less self-determined form of motivation (i.e. to gain financial reward) (Calvo et al., 2010). Though, in a club sport setting, as this study is focused, continued participation decisions are more likely to be driven by intrinsic motivation, as naturally there are few external rewards on offer for participating in club sport in New Zealand.

Coach Behaviour

Coach behaviour can be simply described as the suite of behaviours that coaches perform in their duties as a sports coach, including those behaviours relevant to performance and participation (Côté & Gilbert, 2009). Critically, coach behaviours have a direct influence on the psychological responses of athletes, and have been found to heavily influence the motivation of athletes (Vallerand & Losier, 1999; Duda & Balaguer, 2007). In most club sports teams, coaches are solely responsible for designing and conducting training sessions, selecting who plays in competition games, instructing athletes as to how to play, what game strategy the team adopts, enforcing discipline, providing feedback, and helping to “motivate” athletes (Rocchi & Pelletier, 2017). In taking up these responsibilities, coaches create a motivational climate that has a significant impact on athlete’s enjoyment, satisfaction, intrinsic motivation, and consequently, athletes’ continued sport participation (Ames, 1992). Research findings show sports dropout is significantly correlated with negative/low athlete perceptions of coaching behaviour (Gearity & Murray, 2011; Hollembeak & Amorose, 2005). For these reasons, Sport New Zealand (2012) identify coach behaviour as one of the key factors in retaining athletes in sport.

Utilising an expert systems approach Côté and Gilbert (2009), examined expert coach behaviour in varied sports training and competition environments and identified seven dimensions of coach behaviours. The seven dimensions of coach behaviour are as follows; 1) Physical Training and Planning (i.e. the contribution to an athlete’s physical training and conditioning), 2) Technical Skills (e.g. demonstration or feedback provision), 3) Goal Setting (i.e. aiding athlete to identify, develop and achieve goals, 4) Mental Preparation (i.e. provision of advice or training to help athlete cope with mental demands), 5) Competition Strategies (i.e. positive strategy focused interactions with athlete during competition), 6) Personal Rapport

(i.e. ability to be available, approachable and to understand athlete), and 7) Negative Personal Rapport (i.e. reliance on yelling, or fear-inducing interactions to achieve coaching outcomes) (Côté & Gilbert, 2009).

While there is not a substantial body of literature covering the topic of the various coach behaviours and their influence on athlete intrinsic motivation, these factors have been examined by a few researchers (see - Amorose & Horn, 2000, 2001). Of the research on the topic, the majority, if not all, has been based upon cognitive evaluation theory (CET). CET is a sub-theory of self-determination theory which is concerned with the social factors that affect intrinsic motivation (Ryan & Deci, 2000, 2002). The theory narrows down on the need for autonomy and competence, and champions the notion that individuals who feel competent and self-determined in an activity will, as a result, be highly intrinsically motivated (Ryan & Deci, 2000, 2002). Thus, in accordance with CET, researchers propose that where coach behaviours affect an athlete's autonomy or competence, the athlete's intrinsic motivation is affected as a result and, subsequently, as is continued participation (Ryan & Deci, 2000, 2002). Research findings support CET, for example, feedback and intrinsic motivation have been found to have a significant relationship that is mediated by perceived competence. While, in addition, Amorose and Horn (2000) found intrinsic motivation in athletes from a range of college sports was influenced by their perceptions of their coach's feedback and general leadership. They found athletes had a greater sense of autonomy, and in turn, intrinsic motivation, when their coach was perceived to adopt a democratic leadership style and exhibited few autocratic behaviours. While numerous coaching behaviours are likely to influence an athlete's intrinsic motivation, and subsequently, their continued sports participation, coach feedback stands out in past research findings as a significant determinant of continued participation (Horn, 2008).

Feedback

In a broad sense the term feedback refers to any form of communication delivered as a response. In a sporting context though, coach feedback refers to the indications coaches provide to athletes about goal progress, and the correctness of their performance either at training or in games (Paul E. King, Paul Schrodtt & Jessica J. Weisel, 2009). Aside from the general leadership style of coaches, feedback in particular has received the bulk of attention in published research focused on coach behaviours. As one of the main methods in which coaches are able to influence their athletes, feedback is a crucial component of coaching (Amorose & Nolan-Sellers, 2016). Through the provision of information about performance and goal progress, feedback enables coaches to reduce uncertainty and reaffirm an athlete's beliefs, subsequently, increasing self-perceptions and leading to improved development, performance and motivation (Linderbaum & Levy, 2010)

It is important to note however that the type of feedback a coach employs greatly impacts whether or not the aforementioned positive outcomes are achieved. Early studies of coach feedback focused on two types; positive and negative feedback (e.g., Vallerand & Reid, 1984; Whitehead & Corbin, 1991). Results of such research have identified a relationship between high athlete intrinsic motivation and positive feedback, whereas negative feedback has been associated with low athlete intrinsic motivation (see - Weinberg & Jackson, 1979; Weinberg & Ragan, 1979; Schunk, 1995). One of the first of these studies was conducted by Whitehead and Corbin (1991), whose experiment saw athletes in a shuttle-run task informed of their performance ranking (i.e. 10th percentile). Athletes performed two practice runs after which their intrinsic motivation and perceived competence were measured. After two weeks the same athletes completed two runs, however on this occasion athletes either received positive feedback (i.e. 80th percentile), negative feedback (i.e. 20th percentile) or for those in

the control group, no feedback. Intrinsic motivation and perceived competence were measured after the provision of feedback/no feedback. This research showed positive feedback (i.e. a high ranking), led to increased perceptions of competence, which subsequently led to increased intrinsic motivation, while the opposite was true for negative feedback. These findings have been replicated in a diverse range of sports, such as running (Gernigon, & Delloye, 2003), gun shooting (Gernigon, Fleurance, & Reine 2000), athletics (Escarti & Guzman, 1999), and cricket (Woodcock & Corbin, 1992).

Rather than just focus on positive and negative feedback, more recent studies have investigated a greater range of feedback types. In their development of the coach feedback questionnaire (CFQ), a measure of athletes' perceptions of coach feedback, Amorose & Horn (2000) included eight different types of feedback responses. The eight feedback types were drawn from earlier observational studies (see - Smith et al., 1977; Horn 1985), and included five feedback types which were given in response to players' performance mistakes (ignoring mistakes, mistake-contingent encouragement, corrective instruction, corrective instruction combined with punishment, and punishment) and three forms of feedback which are given by a coach in response to performance success (reinforcement/praise, reinforcement combined with technical instruction, and non-reinforcement) (Amorose & Horn, 2000).

When investigating the relationships between these feedback types and intrinsic motivation, Amorose and Horn (2000) found that frequent praise/reinforcement-based feedback which included technical instruction yielded the highest levels of intrinsic motivation in athletes, while the lowest levels of intrinsic motivation were associated with feedback that ignored behaviours as well as punishment-oriented feedback. Amorose and Horn (2000) posited that these results fit with CET, in that the high levels of intrinsic motivation resulted

from less frequent ignoring behaviours and punishment-orientated feedback, and frequent praise/positive and instructional feedback leading to a greater sense of autonomy and perceptions of competence among these athletes.

Research findings support Amorose and Horn's (2000) assertions, with female hockey players' higher levels of perceived competence and satisfaction related to positive and informative feedback after mistakes (Allen & Howe, 1998). Further support is evident in the replication of the results in a sample of female soccer players by Price and Weiss (2000). In fact, there is a substantial body of literature to suggest coaches who provide positive – praise and instructional based feedback to their athletes are more likely to satisfy their needs of autonomy and competence, leading to increased intrinsic motivation which theoretically, should result in greater levels of continued participation (Mouratidis, 2008).

Feedback Orientation

Coach feedback and athletes' continued sports participation has received significant attention in the existing sports research, but, while this has provided useful information, there are still a number of gaps in the literature. One of these limitations is that, to the author's knowledge, no consideration has been given to athlete individual differences in receptivity to feedback. Conversely, in an organisational context the ability to cater to such individual differences has been viewed as crucial to the effectiveness of the feedback process being used as a tool for developing and retaining talent (Linderbaum & Levy, 2010). In their work to understand individual differences in receptiveness to feedback, London and Smither (2002) introduced *feedback orientation*, a multi-dimensional construct which represents “an individual's overall receptivity to feedback” (p.81). The original construct was described as having six dimensions, however this was refined to four in more recent research as outlined

further below. Feedback orientation is thought to shape individual feedback-seeking behaviours, as well as the degree to which they value, process and feel responsible for acting on feedback (Linderbaum & Levy, 2010; London & Smither, 2002). London and Smither (2002) proposed individuals with weak feedback orientation are likely to ignore and be resistant to the feedback, while those with strong feedback orientation are expected to act on the feedback they receive, be more attuned to feedback, and place a greater value on feedback. Conversely, individual's with weak feedback orientation are expected to be less likely to act on feedback, and more likely to ignore and resistant it. Consequently, London and Smither (2002) also theorised that an employee's feedback orientation would determine how receptive they were to coaching, and thereafter, how effective the coaching was.

Continuing on from London and Smither's (2002) original work, Linderbaum and Levy (2010) refined the construct of feedback orientation and developed a validated multidimensional measurement scale. Based on their research findings, Linderbaum and Levy (2010) assert that feedback orientation is comprised of four dimensions which predict variance in individual responses to feedback. The dimensions of feedback orientation are utility, social awareness, accountability and feedback self-efficacy. Utility refers to one's beliefs regarding the usefulness of the feedback for attaining their goals, while, social awareness refers to an individual's sensitivity to how others view them and the use of feedback to determine this. Self-efficacy in this context refers to the confidence one has in their ability to understand feedback and carry out the appropriate response. Lastly, accountability is the level of obligation one feels to use the feedback. Overall feedback orientation, and each of the four factors, are measured in this study to determine their influence on continued sports participation.

Although the study of feedback orientation is still relatively new, research findings within an organisational context to date highlight the important role feedback orientation may play whilst providing support for the previously theorised construct and relationships. Rasheed et. al (2015) for example, found that employees with stronger feedback orientation were more likely to be satisfied with the feedback they received, regardless of its nature, and consequently that in-role performance, job satisfaction and retention were likely to be higher. Additionally, research found evidence of a positive relationship between feedback orientation and job performance, mediated by feedback-seeking frequency (see - Dahling et al., 2012).

Several researchers believe that feedback orientation has a wider impact within the coaching process than just influencing the effectiveness of feedback alone (Gregory et al., 2008; Joo, 2005; McDowall & Millward, 2010). It is theorised that, on top of affecting feedback response behaviours and attitudes, feedback orientation also influences receptiveness to coaching (London & Smither, 2002). Specifically, it is suggested that stronger feedback orientation leads to greater coaching receptiveness (London & Smither, 2002). Notably, receptivity to coaching is recognised as a critical factor for coaching effectiveness, and subsequently, may have significant impact on the motivational influence of coaches (Joo, 2005; Laske, 1999). Furthermore, as a result of being more open to engaging in coaching, those individuals with strong feedback orientation may have increased positive perceptions of coaching on top of their increased perceptions of coach feedback (London & Smither, 2002).

While some research has explored the impact of feedback orientation in relation to job outcome variables, to the author's knowledge no research has been conducted that features feedback orientation in a sport context, let alone in relation to sport participation. Importantly, despite feedback orientation being considered a relatively stable individual difference, there is

a general consensus in the relevant literature that it is open to development either through environmental changes or individual efforts (London & Smither, 2002; Linderbaum & Levy, 2010). Thus this study aims to assess athletes' feedback orientation and its impact on continued sport participation. Specifically, it is proposed that an athlete's feedback orientation will have a significant positive influence on continued sports participation, such that the stronger an athlete's feedback orientation, the more likely they will be to continue to participate in sport. Based upon the existing empirical research, and through self-determination theory, the following is hypothesised:

Hypothesis 1: Feedback orientation will be positively associated with continued sports participation (H_{1a}).

Hypothesis 1b, 1c, 1d & 1e: Each of the four feedback orientation factors (utility, social awareness, feedback self-efficacy and accountability) will be positively associated with continued sports participation (H_{1b} , H_{1c} , H_{1d} , H_{1e}).

Measuring Continued Sports Participation

In order to test the hypotheses, this research used a three-phase design where *feedback orientation* was measured at phase 1, and continued sports participation was assessed through the measurement of *intention to continue* (playing sport) at phase 2, and (sport) *continuation behaviours* at phase 3. Measurement of continued sports participation typically relies on longitudinal research that is able to measure participation rates during more than one season. However, in cases (such as this dissertation) where longitudinal research is not feasible, researchers have to adopt a method of examining athletes' intention to continue participating within a shorter time frame. Several studies show that, in a general setting, intentions are reliable predictors of behaviour (see - Armitage & Connor, 2001; Ajzen, 1991; Trafimow, Sheeran, Conner, & Finlay, 2002), while within a sporting context, studies show that intentions to continue are predictive of athletes' actual continued participation behaviour (Balish et al., 2014; Prins et al., 2010). For example, in their meta-analysis of correlational studies, McEachan et al. (2011) surmised that intentions explain 33% of variance in continued sports participation. Similarly, in their meta-analysis of 47 experimental studies which were focused on the intention to behaviour relationship, Rhodes and Dickau (2012) found strong evidence that intention is a significant predictor of actual physical activity.

Several models have been developed to explain the predictive relationship between intention and behaviour; debatably within a health and sport context the most popularly researched of these models is the Theory of Planned Behaviour (TPB) (Ajzen, 1988, 1991; Conner, 2020). The TPB postulates that individuals form beliefs based on their expectations and values of carrying out a behaviour (Downs & Hausenblass, 2005). Individuals are said to form behavioural, normative, and control beliefs which, subsequently, effect their attitude

toward the behaviour, subjective norms and perceived behavioural control (Downs & Hausenblas, 2005).

Although necessary for certain study aims, Ajzen and Fishbein (2000) assert that it is not always necessary to measure each of the aforementioned constructs. That is, while the prediction of intention requires the measurement of subjective norms, attitude and perceived behavioural control, the prediction of behaviour can be achieved by simply measuring intention alone. Reviews of sports participation and the TPB literature (see - Symons, Downs & Hausenblas, 2005; Hagger, Chatzisarantis, & Biddle, 2002) support this assertion, with findings providing evidence that of all the predictive relationships (i.e. intention-behaviour, attitude-behaviour, subjective norms-behaviours, and perceived behavioural control-behaviour), intention was the strongest predictor of sport participation behaviours. Accordingly, *intention to continue* (playing sport) was selected as an outcome variable for this study in place of actual continued sports participation, which couldn't be measured by way of the required longitudinal study due to the time constraints of this study.

Although there is a substantial collection of research which demonstrates the predictive validity of intention in relation to exercise behaviour, there are some limitations (Blue, 1995; Hagger, Chatzisarantis, & Biddle, 2002). One limitation that is particularly relevant to this study, and reported as significant in literature, is that the ability of intention to predict behaviour decreases when time between the measurement of the two increases (see - Ajzen & Madden, 1986; Davidson & Jaccard, 1979). Theodorakis (1994) for example, found that the predictive strength of intention was less when intention and behaviour were separated by two months ($R=.57$), versus when the measurements were separated by one month ($R=.61$).

In the current study there will potentially be upwards of four months between the measurement of participants' intention to continue playing and the beginning of their next club sports season, whereby they will actually continue participating or not. As such, to mitigate the limitation of a time delay and increase the validity of the study, participants' *sport continuation behaviours* were included as a measure check for *intention to continue*. In the context of this study, *continuation behaviours* are described as those behaviours one might commonly be expected to carry out, between the end of one sporting season and the next, which indicate continued participation in the sport (e.g. purchasing sporting equipment for the next season). Thus, continued sport participation was measured by assessing both rated intention to continue sport participation at phase 2 and sport continuation behaviours at phase 3.

Overview of Current Research

In summary, the present study examined the relationships between feedback orientation and continued sports participation, exploring if and to what extent feedback orientation and each of its sub-dimensions are related to continued sports participation. It was hypothesised that overall feedback orientation, and each of the dimensions of feedback orientation, would be positively associated with continued sports participation. In the current study, continued sports participation was determined by measurement of intention to continue and, sport continuation behaviours.

Method

Design

This study employed a three-phase micro-longitudinal within-subject design. That is, data was gathered from the same participants, by way of three surveys, at three separate points in time. Each survey was separated from the next by a time lag of four to five weeks. The rationale behind this design was to achieve temporal separation of the independent and dependent variables, so as to reduce the risk of common method variance (Podsakoff et al. 2003). As Le et al (2009) report, concurrent measurement of the independent and dependent variables may introduce artificial covariance. Adequate temporal separation ensures previously recalled information leaves short-term memory, reducing participants' likelihood to rely on contextually provided retrieval cues and/or previous answers to deduce absent information (Podsakoff et al. 2003). Accordingly, at time one (T1), *demographics* and athlete *feedback orientation* were measured. Participants' *intention to continue playing* was measured at time two (T2). *Continuation behaviours* were measured at time three (T3) so as to create separation from *intention to continue*.

In order to control for the impact of athletes' coach feedback experience, *perceived coach feedback* was also measured; this measurement took place at T2. To control for method biases and priming effects the order of the measurement of variables was counterbalanced, and this was the case in each of the surveys (Podsakoff et al. 2003). Each of the three surveys also included measures for the following variables; *sports enjoyment*, *perceived competence*, and *injury*. This was to allow for measurement of, and to control for, any changes in these factors across the duration of the micro-longitudinal study. Such changes over time are likely to result in maturation contamination, a direct threat to internal validity, as the relationships of interest (i.e. hypotheses) could be affected by changes in the aforementioned variables.

Additionally, *highest level of competition played* and *years playing the sport* were measured at T1, and finally, to control for any potential impacts of COVID-19 on continued participation, the T3 survey included a measure of *COVID-19 impact*.

Participants

Eligible participants were athletes who were both over 18 years of age and playing club sport within Canterbury, New Zealand. Time 1 saw 245 athletes complete the first survey, 101 surveys were completed at Time 2, and 75 surveys were completed at Time 3. No participants were found to have only completed the T2 survey or T3 survey, that is all those who completed T3 had also completed T2 and T1, and all those who completed T2 had completed T1. However, the attrition rate from Time 1 ($N = 245$) to Time 2 ($N = 101$) was 59%, and the attrition rate from Time 2 to Time 3 ($N = 75$) was 25%. Across all time points, there was a greater proportion of female participants than male participants. At Time 1, 67% of participants were female ($N=164$) and 33% were male ($N=81$). Similarly, at Time 2 60% of participants were female ($N=60$) and 40% were male ($N=41$). Lastly, at Time 3 58% of participants were female ($N=44$) and 42% of participants were male ($N=31$). The mean age of participants at each time point is reported in Table 1, as is participants' mean years in sport.

Table 1

Summary of Descriptive Statistics for Age and Years in Sport.

	Time 1 $n = 245$	Time 2 $n = 101$	Time 3 $n = 75$
Variable	M (SD)	M (SD)	M (SD)
Age	27.44 (8.61)	26.88 (8.42)	26.31 (8.63)
Years in Sport	14.52 (7.95)	13.89 (8.21)	13.96 (7.98)

Notably, across the study the highest level of competition played by participants was somewhat skewed from that of what would be expected in a sample of the average club sports population. At Time 1, Time 2, and Time 3, over 50% of participants reported playing provincial level (e.g. Canterbury) or higher (T1 = 59%; T2 = 68%, T3 = 72%). These percentages are vastly higher than 20% which is the reported number of athletes that play representative sport in New Zealand (Sport New Zealand, 2016). This topic is revisited in the discussion section of this dissertation.

Measures

Three self-report surveys, administered via Qualtrics, were employed to measure the variables of interest. Appendix C shows the complete item set for all three surveys.

Demographics

To preserve anonymity, the only demographic variables collected were the participant's primary sport, years playing, highest level of competition, age and gender. Participant age was measured by participant's response when asked to record their year of birth, whilst gender response options were as follows; male, female, gender diverse, or prefer not to say. In the demographics section participants were also be asked to generate a non-identifying code (i.e. first two letters of mother's first name, first letter of own middle name, and day of birth) so as to be able to link the data from each measurement phase.

Adapted Feedback Orientation Scale (A-FOS)

Developed by Linderbaum and Levy (2010), the Feedback Orientation Scale (FOS) is a 20-item scale ($\alpha = .91$) used to measure the feedback orientation of work employees. More specifically, the scale is designed to measure four dimensions of feedback orientation:

utility, accountability, social awareness, and feedback self-efficacy. In order to capture feedback orientation in the context of this study the FOS was adapted so as to be applicable to athletes rather than employees. The adaption consisted of only minor changes such as replacing the word “supervisor” with “coach”, or the word “work” with “in my sport”. Sample items from the A-FOS, respective to each of the four dimensions, include “Feedback is critical for improving performance”, “If my coach gives me feedback, it is my responsibility to respond to it”, “Feedback lets me know how I am perceived by others”, and “I know that I can handle the feedback that I receive”. Items were rated on a 5-point Likert scale, ranging from 1 (*Strongly disagree*), to 5 (*Strongly agree*). The scale was scored by summing the ratings for each factor and dividing the sum by the number of items measuring the factor. The factor scale scores could range from 1 to 5. The higher the scale scores, the greater the participant’s receptivity to feedback relative to that factor (i.e. feedback orientation). An overall feedback orientation score was generated by summing the factor scale scores and dividing these by the number of factors (i.e. 4). Lindebaum and Levy (2010) report strong evidence across two studies in support of the validity and reliability of the FOS. Although relatively new, these findings are supported by those of Gregory, Levy and Jeffers (2008), and Dahling, Chau and O’Malley (2012). Analysis found the following coefficient alphas: overall feedback orientation ($\alpha = .88$); utility ($\alpha = .90$); social awareness ($\alpha = .87$); and feedback self-efficacy ($\alpha = .88$).

Intention to Continue Scale (ICS-S)

Participants’ intention to continue to participate in their primary sport was assessed using a three-item scale, adapted from Colarelli’s (1984) intention to turnover scale. The three items were as follows: “If I had my own way, I will be playing this sport one year from now”, “I frequently think of quitting my sport”, and “I am planning to play my chosen sport next

season”. Items were assessed on a five-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). One item is reverse scored, and the scale was scored by summing the three item ratings and then dividing this by the number of items. The higher the overall response rating, the greater the participant’s intention to continue in the sport. Colarelli’s (1984) original items and similarly adapted versions have been used within an organisational context and results indicate acceptable internal reliability, Colarelli (1984) reported a coefficient alpha of .75. Adaption of these items to a sporting context required only minor changes. Reliability analysis for this study found the following coefficient alpha: ($\alpha = .73$).

Sport Continuation Behaviours Measure (SCB-M)

Sport continuation behaviours are those behaviours that can be associated with the athlete seeking to continue playing the sport in the future. This five-item self-report measure was developed by the author and used to measure the degree to which the participant had engaged in sport continuation behaviours since completing their last sports season. An example of an item is as follows: “I have chosen the club that I will play for next season”, while the items are worded in a definitive sense and could be answered using a dichotomous response (yes/no). A Likert response scale, where 1 = Strongly disagree and 5 = Strongly agree, was selected so as to allow responses to be more reflective of the process associated with the behaviour rather than the definitive answer/final decision. For example, the behaviour of purchasing boots may include the process of researching and selecting which type of boots and saving enough money, etc, so although an individual may not have bought the boots it is possible that they are somewhere in the process of doing so. To generate an overall SCB-M rating for each participant, the item ratings were summed and divided by the number of items. The coefficient alpha found in reliability analysis was .66.

Coach Feedback Questionnaire (CFQ)

This scale was used to assess participants' perceptions of their current coach's feedback. The CFQ consists of 16 items which can be divided into the following three sub-dimensions of coach feedback: positive and informational (eight items), punishment-orientated (four items), and non-reinforcement feedback (four items). Listed are example items of positive coach feedback, punishment-orientated and non-reinforcement feedback respectively: "That's O.K. Keep working at it!"; "That play sucked!"; "Coach doesn't say anything to you about your error or poor performance". Items were assessed on a five-point Likert scale from 1 (not at all) to 5 (very much), such that a low rating meant that type of feedback was not very typical of the participant's coach. Scores were generated for the three sub-dimensions by totalling the respective item ratings and dividing this by the number of items. Previous findings support internal consistency for the CFQ dimensions ($\alpha = .72-.83$) (Amorose & Horn, 2000). Reliability analysis for this study found coefficients alphas as follows: positive and informational ($\alpha = .79$); punishment-oriented ($\alpha = .73$); and nonreinforcement feedback ($\alpha = .83$).

COVID-19 Impact Scale

The global pandemic, COVID-19, spread across the world in 2020 and subsequently impacted the day-to-day lives of all New Zealanders for a significant period of time. Sport participation was directly affected, with the New Zealand government's strict laws regarding social distancing resulting in all sport being cancelled for over eight weeks. The impact of said cancellations on future sport participation is unknown. As such, a question was included at phase three to determine if the pandemic had any impact on athletes' intention to continue participating in sport. Specifically, this measure asked participants to respond to the following item: "Have the restrictions imposed on sports during the COVID-19 pandemic caused you to

change your mind about continuing to play your sport next season?”. The response options were “yes” or “no”. Those who responded “yes” were then asked to provide a text entry for the following item: “If so, how?”.

Sport Enjoyment

Participants’ level of enjoyment in their primary sport was measured using the four-item enjoyment subscale of the Sports Commitment Model. This was assessed on a five-point Likert scale from 1 (not all) to 5 (very much). An example of a scale item is “Do you enjoy playing your main sport?”. An overall enjoyment score was generated by summing the item ratings and dividing this by the number of items. Results from several studies support the validity and reliability of the scale, for example, Gardner, Magee and Vella (2017), report a Cronbach’s alpha of 0.96 (Gardner, Magee & Vella, 2017). Reliability analysis for this study at each phase found coefficients alphas as follows: enjoyment time 1 ($\alpha = .79$); enjoyment time 2 ($\alpha = .79$); and enjoyment time 3 ($\alpha = .83$).

Perceived Competence

The six-item perceived competence subscale of the Intrinsic Motivation Inventory was used to assess participants’ perceptions of competence with regard to their own ability to play their main sport. Participants were required to record their level of agreement with the items (e.g. “I think I am pretty good at this sport). This was assessed on a five-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree), an overall score was generated by summing the item ratings and dividing this by the number of items; the higher the score the greater the participants’ perceived competence. The items were modified slightly from the original, so as to cater to all sports rather than just basketball. Several studies support reliability and validity of this subscale, including McAuley (1989) who reported a Cronbach’s alpha of

0.84 (Ntoumanis, 2001). Reliability analysis for this study found coefficients alphas as follows: perceived competence time 2 ($\alpha = .80$); and perceived competence time 3 ($\alpha = .82$).

Injury

Participants' injury status (injured or not) was gathered at each time point with a single item. The first survey asked, "How many injuries have you suffered in the last two seasons" and response was by way of entering the number of injuries. While the surveys at T2 and T3 included the item, "Have you sustained any serious injuries since completing the last survey?". Response options for T2 and T3 were "yes" or "no".

Procedure

Participants were recruited via snowballing, through emails to Canterbury sports clubs which included direct links to the three online questionnaires administered on Qualtrics. The distribution of the survey links and the temporal separation of each survey was timed so as to ensure the first two were completed during the sports season, and the last survey completed as long after the season as possible, to allow participants to engage in continuation behaviours, given the time restraints related to completion deadlines of this dissertation.

Three weeks prior to the first questionnaire going live (i.e. able to be accessed via link) senior coaches and administrators from every listed netball, rugby union, hockey and football club in Canterbury were emailed an invitational letter (Appendix A) explaining the study broadly. Additionally, the email requested that the recipients share this information and an advertisement with the direct links to the questionnaires with their athletes aged 18 and older. Note, each of the surveys were set to be live at specific time periods, so that anyone who followed the link outside these time periods was directed to a screen alerting them of the

dates to use the link. Athletes who chose to voluntarily complete the first survey, followed the first link and were presented with an information and consent form (see Appendix B) which participants had to agree to before continuing the questionnaire. Those who consented then completed the survey, which included generation of a unique code which enabled results to be linked across T1 to T3. Five weeks after T1, emails were sent out to the same sports clubs inviting participants who had completed the first survey to take part in the second. Once again, those who chose to complete the survey followed the second link and were then required to consent, before completing the questionnaire. Four weeks after T2, the same process was repeated with participants invited to take part in survey 3.

The three-phase nature of this study lent itself to the issue of subject mortality, that is over time there was a risk of participants dropping out before completing all phases of the study. To somewhat mitigate this risk, care was taken to ensure all instructions were clear and straightforward, and that the surveys were not too time intensive. Additionally, participants were informed that they would enter the draw for one of 20 x \$50 vouchers as a token of appreciation for completing all three phases. To enter the draw participants who completed the third survey were led to a separate webpage whereby they voluntarily entered their email address. All information gathered for the prize draw was used only for that purpose, kept separate from the survey data, and destroyed as soon as prizes had been distributed. Furthermore, this study followed ethical practice, and was reviewed and approved by the University of Canterbury Human Ethics Committee, reference number HEC 2019/10/BL.

Data Analysis

The statistical analyses for the current study were conducted using IBM SPSS software. Before commencing data analysis, T1, T2 and T3 survey responses were matched using the participant's ID. As reported, no participants were found to have only completed the T2 survey or T3 survey, that is all those who completed T3 had also completed T2 and T1, and all those who completed T2 had completed T1. However, there was attrition across three surveys; T1 N=245, T2 N=100, T3 N=75. Before generating scale scores, necessary items were reverse coded and as outlined in the method section, scores were generated for the following measures: enjoyment, perceived competence, injury, continuation behaviours, intention to continue, and each of the subscales of the CFQ and A-FOS.

Preliminary data analysis included reliability analyses, exploratory factor analysis and descriptive statistics. Due to the design and timing of the measures, survey responses from T1 (N = 245) were used for the reliability and factor analyses of the feedback orientation scale, T2 data (N = 100) were used for the reliability and factor analyses of intention to continue and perceived coach feedback scales, and lastly, T3 data (N = 75) were used for the reliability and factor analyses of sport continuation behaviours. To test each of the outlined hypothesis partial correlations and stepwise regression analyses were then conducted.

Results

Preliminary Data Analysis

Percentages of yes and no responses to the COVID-19 impact question were assessed to determine if any of the sample's measured continued sports participation may have been impacted by COVID-19. Only one case was found to have responded yes, indicating that COVID-19 had influenced their intention toward future sports participation. As such, this case was removed from further analysis, and subsequently the sample size at times 1, 2, and 3 decreased to 244, 100 and 74 cases respectively.

Reliability Analyses and Exploratory Factor Analysis

Measures of internal consistency were used to determine the internal reliability of each scale. The Cronbach's alphas (α) for each scale are as reported in the method section. With the exception of the continuation behaviours measure, all measures of internal consistency indicated acceptable to good reliability, ranging from .71 to .89 (George & Mallery, 2003). Reliability for the sport continuation behaviours measure ($\alpha = .66$) was questionable when considered against George and Mallery's (2003) standards, however, there is a significant body of research which considers .60 to be acceptable reliability for a newly developed measure (Taber, 2017), as is the case in the current study. Furthermore, the continuation behaviours measure is not measuring a construct as such, but rather a cluster of behaviours so a high coefficient alpha is perhaps not to be expected.

To assess and determine the dimensionality of each scale, exploratory factor analysis using principal axis factoring with oblique rotation were conducted. As recommended by DeVellis, 2016 and Shultz, Whitney, and Zickar, 2013, the inclusion criteria included factor loadings greater than .40, eigenvalues greater than one, and items loading on one factor,

without any cross loading greater than .30. Factor analysis was deemed as necessary for the intention to continue scale and sport continuation behaviours measures which were used for the first time in the current study, and the A-FOS scale which had previously not been used within a sporting context. Detailed results of the factor analysis for each measure, including eigenvalues, variance explained, factor loadings, and communalities, can be found in Appendix E, in Tables A to C. Sampling adequacy for each scale was established, with Kaiser-Meyer-Olkin (KMO) measures ranging from .65 to .88 and so, all greater than Field's (2014) suggested level of .50.

Examination of the athlete feedback orientation scale (Appendix E – Table A) saw three factors extracted with eigenvalues greater than 1 (Kaiser, 1960), as opposed to the expected four factors which would have represented the four subscales. Items of the utility, social awareness and feedback self-efficacy subscales, all loaded into the correct factors representing these three subscales. However, items 6 to 10 (the accountability subscale) all had factor loadings below the recommended cut-off of .40 (Hinkin, 1995), suggesting the accountability dimension was not being reliably measured and as such, these items were removed. The removal of these items saw reliability of the overall feedback orientation scale increase from .85 to .88, and the percentage of variance accounted for increase from 43.60% to 48.15%.

For the intention to continue scale (see Appendix E - Table B) all three items loaded onto one single factor, and the same was true for the sport continuation behaviour measure items (see Appendix E - Table C).

Range Restriction Analysis

According to Raju and Brand (2003), range restriction can suppress relationships in correlation-based analysis, as such ideally data used for correlation analysis is normally

distributed. To identify any instances of range restriction, descriptive statistics, including means and standard deviations, and the distribution of the data (skewness and kurtosis) were analysed. Kim (2013) reports that, for sample size ranging from 50 to 300, data is non-normally distributed when absolute Z values for skewness and kurtosis are over 3.29. To calculate skewness and kurtosis Z values, the actual skewness and kurtosis values were divided by their standard error. The skewness and kurtosis Z values, as well as the means and standard deviation are reported in Table 2.

Table 2

Range restriction analysis and descriptive statistics of key variables.

	Time Point (n)	M (SD)	Skewness (SE)	Skewness Z-score	Kurtosis (SE)	Kurtosis Z-score
Overall Feedback	Time 1	4.05	-1.24	-5.18	2.98	6.26
Orientation	(245)	(.52)	(.24)		(.48)	
FO: Utility	Time 1	4.05	-1.53	- 6.35	2.84	5.96
	(245)	(.59)	(.24)		(.48)	
FO: Social Awareness	Time 1	3.64	-.67	- 2.86	1.90	3.99
	(245)	(.72)	(.24)		(.48)	
FO: Feedback Self-efficacy	Time 1	4.07	-1.23	-5.14	2.37	4.99
	(245)	(.61)	(.24)		(.48)	
CFQ: Positive & Informational	Time 2	3.12	-.31	-1.28	-.114	- .47
	(101)	(.81)	(.24)		(.48)	
CFQ: Punishment Oriented	Time 2	1.93	.51	2.11	.10	.21
	(101)	(.72)	(.24)		(.48)	
CFQ: Non-reinforcement	Time 2	2.49	.58	2.42	-.01	.01
	(101)	(.95)	(.24)		(.48)	
Intention to Continue	Time 2	4.29	-.86	-1.10	-.47	-.99
	(101)	(.79)	(.24)		(.48)	
Sport Continuation Behaviours	Time 3	3.64	-1.08	-3.85	1.96	3.55
	(75)	(.73)	(.28)		(.55)	

Note: CFQ (Coach Feedback Questionnaire); FO (Feedback Orientation).

Table 2 shows skewness and kurtosis values that indicate non-normally distributed data for overall feedback orientation, each of the feedback orientation dimensions and sport continuation behaviours (Kim, 2013). Each of these large skewness values are negative, indicating the majority of the respective data is distributed to the right-hand side of the mean. The kurtosis values for the aforementioned variables were large and positive indicating leptokurtic distributions, that is a greater density around the mean than would be expected with a normal distribution (Hopkins & Weeks, 1990). Given range-restricted data can lead to suppression of correlations, it is possible that any correlations from this study, that involve the non-normally distributed data, will be smaller than if the data was normally distributed (Casico & Agunis, 2008).

Internal Validity: Control Variables

Means and standard deviations are reported for each of the control variables in Table 3 below. In order to determine if there were any threats to internal validity by way of maturation contamination from changes in the control variables over time, repeated measures ANOVA of injuries and perceived competence (PC) at T2 and T3, and of enjoyment (T1, T2, T3) were conducted. No significant differences (changes) were found between the means of injuries over time [$F(1,72) = .40, p = .53$]. Equally, no significant differences (changes) were found in perceived competence [$F(1,72) = .01, p = 1.00$]. Finally, repeated measures ANOVA of enjoyment determined that there was no significant difference (changes) between the means [$F(2,145) = 1.29, p = .14$]. Consequently, no major threats to validity by way of maturation contamination were identified as a result of changes in enjoyment, injuries and perceived competence. As such these variables are not considered further.

Table 3*Summary of Descriptive Statistics for Control Variables*

	Time 1 <i>n</i> = 244	Time 2 <i>n</i> = 100	Time 3 <i>n</i> = 74
Variable	M (SD)	M (SD)	M (SD)
Enjoyment	4.60 (.74)	4.37 (.84)	4.52 (.62)
Injuries		.19 (.39)	.15 (.36)
Perceived Competence		3.61 (.62)	3.61 (.55)

The frequencies of level of competition played at each time point was assessed to determine if the level of competition the samples played in had been distorted over time through attrition. That is, if there were significant changes in the level of competition played within each time point sample, due to changes in the sample as a result of participants dropping out of the study. Any such changes would be considered a threat to external validity: the generalisability of the results. As shown in Table 4, there was a slight change in the percentage of participants who played for a provincial team, with this increasing from 34% in T1 to 50% in T3. Another notable difference was observed at the club team level with this decreasing from 25% at T1 to 15% at T3. However, despite some changes, the sample across the phases was relatively consistent, with over 50% of participants at each time point playing some at a representative level, and as such no threat to validity from changes to level of competition played were identified.

Table 4*Frequencies of levels of competition played across time*

Items (Levels)	Time 1 <i>n</i> = 244		Time 2 <i>n</i> = 100		Time 3 <i>n</i> = 74	
	Count	%	Count	%	Count	%
1. Club team (any level)	60	25%	19	19%	11	15%
2. Top club team	43	17%	14	14%	11	15%
3. Provincial team (e.g. Canterbury)	83	34%	43	43%	37	50%
4. South or North Island team	7	3%	3	3%	1	1%
5. Other – national type representative team (e.g. Maori)	14	6%	4	4%	2	3%
6. New Zealand team	38	16%	18	18%	13	18%

Intention to Continue and Sport Continuation Behaviours

To test the validity of the *intention to continue* measure, Pearson Product Moment Correlations were conducted, using the matched responses across T2 and T3 data (*n* = 74), to examine the relationship between *intention to continue* (T2) and *continuation behaviours* (T3). Consistent with suggestions that intentions predict behaviour, and in support of *intention to continue* as a valid measure, inspection of the correlation showed that the *intention to continue in sport* scale score was positively and significantly related to the *sport continuation behaviours measure score* ($r = .25, p < .01$).

Athlete Feedback Orientation and Intention to Continue*Partial Correlation Analysis*

Given the proven validity of *intention to continue* as a valid measure of *continued sports participation*, the first partial correlations were calculated to test for evidence of the hypotheses that *overall feedback orientation*, and each of the *feedback orientation dimensions* (T1) would predict *intention to continue* (T2). The matched responses across T1 and T2 data (*n* = 100) were used, allowing for the sample size to be larger than had T3 data (i.e.

Continuation behaviours) been included. Participants' *perceptions of coach feedback* were controlled for, to ensure any of the variance caused by *coach feedback* in *intention to continue* was removed. The first partial correlation analyses was run to determine the relationship between an individual's *overall feedback orientation* and *intention to continue* whilst controlling for *coach feedback*.

As shown in Table 5, there was a small, positive significant correlation between *overall feedback orientation* and *intention to continue* whilst controlling for each of the *coach feedback* dimensions, $r(95) = .21, N = 100, p = .04$. However, zero-order correlations also showed that there was a statistically significant, small, positive correlation between *overall feedback orientation* and *intention to continue* ($r(98) = .20, N = 100, p = .04$), indicating that *coach feedback* had very little influence on the relationship between *overall feedback orientation* and *intention to continue*.

Next partial correlations were run to determine the relationship between each of the *feedback orientation dimensions* and *intention to continue*. The respective partial correlations between the *utility* and *social awareness* dimensions of *feedback orientation*, and *intention to continue* were both small, positive and statistically non-significant when controlling for *coach feedback* (see Table 5). Zero-order correlations for the same variables produced the same findings. A significant and moderate partial correlation was found between the *feedback self-efficacy dimension of feedback orientation* and *intention to continue*, whilst controlling for *coach feedback*. The zero-order correlation showed that there was a statistically significant, moderate, positive correlation between *feedback self-efficacy* and *intention to continue*, indicating that *coach feedback* had very little influence in controlling for the relationship between *feedback self-efficacy* and *intention to continue*.

Table 5*Partial Correlations Between Feedback Orientation Dimensions and Intention to Continue*

Variable	Intention to Continue: Controlling for Coach Feedback	Intention to Continue: Zero- Order Correlations
Overall Feedback Orientation	.21*	.20*
Utility	.08	.08
Social Awareness	.12	.11
Feedback Self-efficacy	.31**	.31**

Note. * $p < .05$ (two-tailed); ** $p < .01$ (two-tailed).

Stepwise Regression Analysis

The significant and positive nature of the relationships of both *overall feedback orientation* and *feedback self-efficacy* with *intention to continue*, indicate support for hypothesis 1a and 1d, that is that these factors are positively associated to *continued sports participation*, whilst the non-significant relationships of *utility* and *social awareness* with *intention to continue* suggest these factors are not positively associated to *continued sports participation*. Stepwise regression analysis was conducted to further examine these relationships and to determine which factors contribute most to *continued sports participation*. The analysis used an exclusion criterion of 0.05, and *Intention to Continue* was entered in as the outcome variable ($N=100$). At step 1 the *coach feedback* control variables (positive and informational, punishment-oriented, and non-reinforcement) were entered, the next steps saw each of the sub-dimensions of *feedback orientation* entered, as well as *overall feedback orientation*. Only *feedback self-efficacy* was significantly related to *intention to continue*, with findings indicating that 14.8% of the variance in *intention to continue* could be accounted for by *feedback self-efficacy* ($R^2=0.15$, $F(1, 98) = 10.54$, $p < .001$). Each of the *coach feedback* variables, as well as, *overall feedback orientation*, *utility* and *social awareness*, were excluded from the model because they did not account for a significant increase in the amount of explained variance in *intention to continue*. Thus, stepwise regression found the best model

was: predicted *intention to continue* = $-1.519 + (.374 * \text{feedback self-efficacy})$, indicating that a one-point increase in an individual's *feedback self-efficacy* corresponds to a .374-point increase in their *intention to continue* in sport.

Athlete Feedback Orientation and Continuation Behaviours

Partial Correlation Analysis

Partial correlations were next calculated to test for evidence of the hypotheses that *overall feedback orientation* and each of the *feedback orientation dimensions* (T1) would predict *Continuation Behaviours* (T3). The matched responses across T1, T2 and T3 data ($n = 74$) were used. As with the previous partial correlations participants' *perceptions of coach feedback* were controlled for. The first partial correlation analysis was run to determine the relationship between an individual's *overall feedback orientation* and *continuation behaviours* whilst controlling for *coach feedback*. As shown in Table 6, there was a small, positive significant correlation between *overall feedback orientation* and *continuation behaviours* whilst controlling for each of the *coach feedback* dimensions, $r(68) = .15, N = 74, p = .04$. However, zero-order correlations also showed that there was a statistically significant, small, positive correlation between *overall feedback orientation* and *intention to continue* ($r(68) = .15, N = 74, p = .04$), indicating that *coach feedback* had little influence on the relationship between *overall feedback orientation* and *continuation behaviours*.

Next partial correlations were run to determine the relationship between each of the *feedback orientation dimensions* and *continuation behaviours*. The respective partial correlations between the *utility* and *social awareness* dimensions of *feedback orientation*, and *continuation behaviours* were both small, positive and statistically non-significant when controlling for *coach feedback* (see Table 6). Zero-order correlations for the same variables

produced the same findings. However, a significant and moderate partial correlation was found between the *feedback self-efficacy dimension of feedback orientation* and *continuation behaviours*, whilst controlling for *coach feedback*, $r(68) = .18, N = 74, p = .03$. The zero-order correlation showed that there was a statistically significant, moderate, positive correlation between *feedback self-efficacy* and *continuation behaviours* ($r(68) = .18, N = 74, p = .03$), indicating that *coach feedback* had little influence in controlling for the relationship between *feedback self-efficacy* and *continuation behaviours*.

Table 6

Partial Correlations Between Feedback Orientation Dimensions and Continuation Behaviours

Variable	Continuation Behaviours: Controlling for Coach Feedback	Intention to Continue: Zero- Order Correlations
Overall Feedback Orientation	.15*	.15*
Utility	.10	.10
Social Awareness	.16	.16
Feedback Self-efficacy	.18*	.18*

Note. * $p < .05$ (two-tailed); ** $p < .01$ (two-tailed).

Stepwise Regression Analysis

Further support for support for hypothesis 1a and 1d, that is, that these factors are positively associated to *continued sports participation*, is indicated by the significant and positive nature of the relationships of both *overall feedback orientation* and *feedback self-efficacy* with *continuation behaviours*, whilst the non-significant relationships of *utility* and *social awareness* with *continuation behaviours*, further suggest that these factors are not positively associated to *continued sports participation*. Stepwise regression analysis was conducted to further examine these relationships and to determine which factors contribute most to *continued sports participation*. The analysis used an exclusion criterion of 0.05, and *Continuation Behaviours* was entered in as the outcome variable ($N=74$). At step 1 the *coach*

feedback control variables (positive and informational, punishment-oriented, and non-reinforcement) were entered, the next steps saw each of the sub-dimensions of *feedback orientation* entered, as well as *overall feedback orientation*.

Only *feedback self-efficacy* was significantly related to *continuation behaviours*, with findings indicating that 9.8% of the variance in *continuation behaviours* could be accounted for by *feedback self-efficacy* ($R^2=0.10$, $F(1, 72) = 11.13$, $p < .001$). Each of the *coach feedback* variables, as well as, *overall feedback orientation*, *utility* and *social awareness*, were excluded from the model because they did not account for a significant increase in the amount of explained variance in *continuation behaviours*. Thus, stepwise regression found the best model was: predicted *continuation behaviours* = $3.633 + (.361 * \textit{feedback self-efficacy})$, indicating that a one-point increase in an individual's *feedback self-efficacy* corresponds to a .363-point increase in their sport *continuation behaviours*.

Understanding the Variance in Continued Sports Participation

Multiple Linear Regression

Finally, in order to better understand the variance in continued sports participation, a multiple regression was conducted where, in addition to *feedback orientation* and *coach feedback* factors, each of the control variables from the current study were entered as predictors and regressed on *continuation behaviours* (T3). To mitigate any issues of common method variance, *enjoyment*, *injury* and *perceived competence* data from T2, rather than T3, were entered into the regression. Data from the following T1 measures were also entered as predictors: *age*, *gender*, *level of play* (dummy coded) and *years in sport*. The sample consisted of the matched responses from T1, T2 and T3 ($N=74$). To prevent multicollinearity, each of the predictors were grand means centred (Cohen, Cohen, West, & Aitken, 2013). A significant

regression equation was found [$F(13, 61) = 5.108, p < .001$], with an R^2 of .41, these results indicating that the model explained 41% of the variance in *continuation behaviours*. As can be seen in Table 7, enjoyment (T2), perceived competence (T2), feedback self-efficacy and overall feedback orientation all significantly contributed to the model. The final predictive model was: Predicted Continuation Behaviours = $8.339 + (.637 * \text{Enjoyment}) + (.25 * \text{Perceived Competence}) - (.021 * \text{Injury}) + (.528 * \text{Feedback Self-efficacy}) + (.453 * \text{Overall Feedback Orientation}) + (.442 * \text{Social Awareness}) + (.094 * \text{Utility}) + (.012 * \text{Years in Sport}) - (.103 * \text{Level of Play}) - (.041 * \text{Age}) - (.124 * \text{Positive \& Informational}) - (.082 * \text{Punishment-oriented}) - (.031 * \text{Non-reinforcement})$.

Table 7

Regression coefficients for the multiple regression analysis

Variable	Continuation Behaviours	
	B	SE
Enjoyment (T2)	.64**	.13
Perceived Competence (T2)	.25*	.13
Injury (T2)	-.02	.14
FO: Feedback Self-Efficacy	.53**	.22
FO: Overall Feedback Orientation	.45*	.19
FO: Social Awareness	.44	.21
FO: Utility	.09	.10
Years in Sport	.01	.09
Level of Play	-.10	.05
Age	-.04	.02
CFQ: Positive & Informational	-.12	.09
CFQ: Punishment-oriented	-.08	.10
CFQ: Non-reinforcement	-.03	.08
$R^2(\text{adjusted})$.38	
R^2	.41	

Note. * $p < .05$ (two-tailed); ** $p < .01$ (two-tailed); CFQ (Coach Feedback Questionnaire); FO (Feedback Orientation).

Discussion

Given the important role feedback plays in the relationship between coach and athlete, and the proven influence coach behaviour has on sport continuation, it is invaluable to be able to understand how individuals differ in their response to feedback. Identifying individual differences that influence continued sport participation provides researchers and practitioners an opportunity to adapt a traditionally one-size-fits all approach to support individual's unique needs, and in doing so enhance retention in sport. The purpose of the present study was to examine the effects of athlete feedback orientation on continued sport participation. This included confirming the validity of intention to continue as a measure of continued sport participation, by testing the relationship between intention to continue and sport continuation behaviour. The current study may be the first to empirically examine the relationship between feedback orientation and continued sport participation, moreover, it may be the first study to examine feedback orientation in a sporting context.

Re-iteration of Overall Findings

Exploratory factor analysis in part supported the dimensionality of Linderbaum and Levy's (2010) original four factor construction of feedback orientation, with items clearly loading onto the factors of utility, social awareness, and feedback self-efficacy. However, the items measuring the fourth factor, accountability, failed to load onto any factor. On review of the possible reasoning for this, it is suspected that feelings of accountability to feedback in an organisational context differ significantly to those in a sporting context. In an organisational setting, feedback is generally provided in the context of a performance management process, and an individual is likely to feel obliged to act on the feedback to not only improve their performance but also to avoid negative outcomes associated with the performance management process (i.e. being fired) (Haines III & St-Onge, 2012), whereas, in a sporting context the

consequences for not acting on feedback are perhaps less apparent, and less likely to have been articulated through any formal process. Thus, the accountability dimension as validated in an organisational context was likely to have been less relevant in the sporting context. As a result of accountability items having not loaded on any factors, these items were removed and consequently, hypothesis 1e, that the accountability dimension of feedback orientation-accountability would predict continued sports participation, was unable to be tested.

Consistent with past research findings and the theory of planned behaviour, person product moment correlations found intention to continue to be significantly and positively related to sports continuation behaviours. Hence, intention to continue was deemed a valid measure of continued sports participation. Notably, the correlation between the two measures of continued sport participation was small, this is likely due to the range restriction identified in the continuation behaviours data. As reported by Raju and Brand (2003), range restriction can suppress relationships in correlation-based analysis. Thus, it is possible that any correlations from this study that involve the non-normally distributed data will be less than if the data was normally distributed (Casico & Agunis, 2011).

With regards to the relationships between athlete feedback orientation and continued sport participation (H_{1a} , H_{1b} , H_{1c} , H_{1d}), positive correlations between each of the feedback orientation dimensions, as well as overall feedback orientation and intention to continue (after controlling for perceptions of coach feedback), were in line with expected findings, as were the findings from the analysis of the relationship between feedback orientation and continuation behaviours. However, only feedback orientation self-efficacy and overall feedback orientation were found to be positively and significantly related to intention to continue, and continuation behaviours. Likewise, findings of the stepwise regression analyses show overall feedback

orientation and feedback self-efficacy were the only factors to significantly predict intention to continue, and continuation behaviours. Indicating the higher an athlete's levels of feedback self-efficacy or overall feedback orientation, the greater their intention to continue in the sport, the greater their continuation behaviours, and subsequently, the more likely they are to continue participating. These findings, and the lack of significant findings in the relationships between the other feedback orientation factors and continued sports participation, suggest that feedback self-efficacy is the most important facet of feedback orientation when it comes to continued sport participation.

That said, the size of the relationships between both overall feedback orientation and feedback self-efficacy and continued sports participation (i.e. intention to continue and continuation behaviours), is small to moderate and explains far less variance than would be expected. It is possible that the strength of these relationships was suppressed due to the previously discussed range restriction issues associated to the data. However, as shown in the results of the multiple regression analyses, it is also true that feedback orientation is not the only antecedent of sport continuation. A significant portion of the unexplained variance in continued sports participation can be explained by other factors. In line with previous research findings, this study found enjoyment and perceived competence in particular to account for a significant portion of the variance in continued sports participation, as measured by continuation behaviours.

Applied and Practical Value

Given this is the first study to examine feedback orientation in a sporting context, and to research its influence on continued sports participation, the findings from the present study are expected to be of value to sporting organisations, sports coaches, and academics alike. While

coaching has been identified as a key factor for retaining athletes in sport and organisations commonly target coach behaviour (i.e. feedback delivery) in an attempt to retain players, little attention has previously been given to individual differences. The results of this study highlight feedback orientation, and the sub-dimension feedback self-efficacy in particular, as an individual difference variable that, through understanding and development, sporting organisations/coaches can leverage to increase performance and continued sports participation.

Understanding the feedback orientation, and especially the feedback self-efficacy, of individual athletes enables identification of those in the team who may need extra support to respond to feedback. As outlined earlier in text, the dimension feedback self-efficacy encompasses an athlete's feelings of confidence regarding their own ability to firstly, correctly understand and interpret the feedback they receive, and secondly, to appropriately act on that feedback. Should an athlete score low on feedback self-efficacy they may need proactive guidance or reassurance concerning the implementation of any feedback they receive. For example, in the case of a rugby player low in feedback self-efficacy who has received feedback on their tackle technique, the coach may proactively offer to watch and guide the player in tackle drills so as to provide the player confidence to act on the feedback. Whereas a player high in feedback self-efficacy is less likely to need this from the coach, instead they might organise to perform their own drills with another player or simply attempt to implement the new technique in the next game.

Similarly, identifying athletes' differing levels of feedback orientation may offer coaches an insight into which coaching or feedback approach will be most well received by the athlete and, equally, which is most likely to be effective. Moreover, understanding individual feedback

orientation differences is also expected to highlight the level to which athletes are open and responsive to developmental interventions.

In addition, results of this study suggest that identifying and understanding individual differences in athletes' feedback orientation and, specifically, their levels of feedback self-efficacy, would allow sports organisations to adopt approaches that not only cater to these differences, but also directly target an increase in feedback orientation, so as to positively influence continued sports participation. Although greater investigation and future research is required, there is some existing organisational research indicating which methods and interventions might be of value when seeking to develop and enhance feedback orientation. Whilst the research is limited, there is a general consensus that the feedback environment/culture, which includes the provision of high-quality feedback, is a particularly important antecedent to improved/increased feedback orientation (London & Smither, 2002; Gregory & Levy, 2012; Dahling, Chau & O'Malley, 2012).

London and Smither (2002) assert that a supportive feedback environment/culture increases the prospects of feedback being accepted and thus, over time, increases feedback orientation. This assertion is supported by research findings, where employees' feedback orientation was seen to increase based on the supportiveness of their organisation's feedback environment (see – Dahling, Chau, O'Malley, 2012). Steelman et al., (2004) describe a supportive environment as one where feedback-seeking behaviour is encouraged, supervisors are accessible, learning and development are central to the organisation and the feedback provided is credible, high-quality and constructive. Notably, the facilitation of effective coaching is also highlighted in itself by London and Smither (2002) as an important tool for increasing individual feedback orientation over time. Accordingly, for sports practitioners, a

clear focus should be on creating a supportive feedback environment, and ensuring the feedback given is high quality. To achieve this, a first step might be to educate coaches on feedback orientation and its implications for continued sports participation, but also the implications for athletes' engagement in coaching and subsequently overall feedback effectiveness.

In addition to the development of a supportive feedback environment, and the provision of high quality feedback, it is proposed that there may be value in one-on-one targeted coaching of athletes to develop their feedback self-efficacy. Targeted coaching in this sense refers to coaching targeted at athletes who measure as low in feedback self-efficacy. As previously described, feedback self-efficacy refers to the confidence one has in their ability to understand feedback and carry out the appropriate response. As such, it is expected that coaching which helps athletes to identify the correct response to feedback and which provides assurances and reinforces their feedback understanding, is likely to subsequently increase the athletes' feedback self-efficacy. Further research and applied practice is required to refine the aforementioned suggestions and identify best practice, however, it is clear that effective coaching, targeted coaching and the feedback environment have an important role to play in enhancing athlete feedback orientation.

Strengths and Limitations

While there are of course limitations to consider when interpreting the results of this study, considerable care was taken in the design and general methodological approach to the research so as to mitigate and control for any risks. Consequently, this study has a number of strengths, particularly noteworthy are the samples, use of valid measures, and strong design.

Despite some attrition across time, the sample size at each time point was moderate to large, and this positively contributed to the power of the study. This is as a result of mitigating against the risk of subject mortality, which is typically associated with temporally separated studies (Levin, 2006). Care was taken to ensure the temporal separation wasn't excessively long, that all instructions to participants were clear and straightforward, and that the surveys were not too time intensive. Additionally, participants were informed that they would enter the draw for one of 20 x \$50 vouchers as a token of appreciation for completing all three phases. Further sampling of the population of interest ensured the sample was representative in most domains (i.e. gender, age, sports played). That said, the generalisability of the results is limited in that the level of competition played across the sample was somewhat higher than would be expected in the population. It is reckoned that athletes who play at a higher level are more likely than the general sporting population to continue in their chosen sport due to their obvious individual performance success and previous commitment.

Validity of measures represents a strength of this research in that, with the exception of the continuation behaviours measure, the measures used were all previously validated and, consequently, the results of this study are generally able to be applied and interpreted accurately. However, in this regard a limitation does exist in the failure of the items measuring accountability (FO) to load on any factor, and the subsequent removal of these items from further analysis. As a result of this, the construct validity of overall feedback orientation was compromised. It is possible that the inclusion of accountability items, tailored in a greater sense to a sporting context, in future research may influence the measured effect of overall feedback orientation on continued sports participation.

Perhaps the greatest strength of the current study is the three-phase micro-longitudinal within-subject design, whereby each of the surveys was separated from the next by a time lag of four to five weeks. This design enabled temporal separation of the independent and dependent variables to be achieved, substantially reducing the risk of common method variance (Podsakoff et al., 2003). Common method variance bias occurs when there is a dependence on self-report data as the single method of measurement, and results in variance in responding due to the method of measurement (e.g. survey) instead of as a result of the individual's actual position concerning the construct (Kline et al., 2000; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, as Podsakoff et al., (2003) report, adequate temporal separation ensures previously recalled information leaves short-term memory, reducing participants likelihood to rely on contextually provided retrieval cues and/or previous answers to deduce absent information, subsequently, controlling for common method variance. Further, to control for method biases and priming effects, the order of the measurement of variables within each survey was counterbalanced (Podsakoff et al. 2003).

In addition, to control for any changes in factors which might intervene and contaminate the relationship findings between the predictor and criterion variables (i.e. maturation contamination), the design also saw the inclusion of measures and analysis of the following variables; sports enjoyment, perceived competence, and injury (Podsakoff et al., 2003). Furthermore, to control for the unknown yet potential impact of COVID-19 on continued participation, the T3 survey included a measure of COVID-19 impact.

From a procedural perspective, the current study sought to limit any risk of social desirability bias, a common limitation of self-report measures. Social desirability refers to the bias that occurs when an individual responds to items by selecting the answer that best reflects

socially desirable behaviour or, in other words, the answer that they believe will be viewed most favourably by others, instead of providing the correct or most accurate response (Crowne & Marlowe, 1960; Krumpal, 2013). Responses shaped by social desirability bias can eliminate true relationships and instead create artificial relationships (van de Mortel, 2008; Crowne & Marlowe, 1960). Social desirability bias was controlled for in this study by ensuring participants knew their responses were anonymous and confidential, and also stressing the importance for truthful answers. Although self-report measures increase the likelihood of social desirability bias and common method variance, this method is also recognised as the most effective means for gathering information about individuals' feelings, intention and perspectives, which would otherwise be unobservable (Podsakoff et al., 2003). Thus, given that this study was investigating participants' own feelings towards feedback and their individual sport continuation intention and behaviours, self-report was considered the most appropriate choice of measurement method.

Future Research Suggestions

Despite the limitations and methodological considerations associated with the current study's findings, the results suggest feedback orientation is worthy of further examination for those researching continued sports participation. There are a number of research directions which could be explored in more depth, the first of these is to build on the early findings of organisational research and identify factors and methods which develop or improve individuals' feedback orientation and, given the results of this study, feedback self-efficacy in particular. Despite considering feedback orientation a relatively stable individual difference variable, Linderbaum and Levy (2010) assert that feedback orientation and the dimensions of feedback orientation can be influenced over time when efforts are made or an environment is shaped specifically to change it. Accordingly, it would be worthwhile to investigate the

development of feedback orientation in individuals over time, and to determine how targeted interventions (e.g. coaching to increase openness to feedback) can aid in improving an individual's feedback orientation so that they are more receptive to feedback. Similarly, future research could explore the interaction between an individual's feedback orientation and the broader feedback culture and environment. Several individual difference variables are found to vary based on interactions with the environment, and initial research in an organisational setting (as discussed above) suggests the same may be true for athlete feedback orientation. It would be worthwhile to examine how individual athlete's feedback orientation differs by sporting environment or situation. Understanding of the environment-athlete interaction, relative to feedback orientation, would provide a starting point for applied researchers to then explore further as to what feedback interventions or experiences are most likely to be effective across the broad athlete population.

The final recommendation for future research is perhaps the most pressing. In line with the construct validity limitation outlined above, future research should seek to further develop and validate the feedback orientation measure, specific to the sporting context. That is, an athlete feedback orientation construct should be developed, from the original feedback orientation construct, which fully captures the dimensions of an athlete's receptivity to feedback in a sporting context. While there are expected to be substantial similarities between the existing feedback orientation measure and athlete feedback orientation, the results of this study's factor analysis alone suggest the accountability dimension of feedback orientation as it is currently measured fails to capture accountability as is relevant in a sporting context. Furthermore, on completion of the development and validation of an athlete specific feedback orientation measure, efforts should be made to determine which of the dimensions (if any) have

the greatest influence on continued sports participation so that these can be targeted with proven interventions and coaching.

Overall Conclusion

The current study examined whether feedback orientation was associated with athletes' continued sports participation. This study may be the first to have empirically examined the feedback orientation and sport continuation relationship, and is likely the first to empirically link overall feedback orientation and feedback self-efficacy with sport continuation. Both overall feedback orientation and feedback self-efficacy were found to be significantly and positively related to sport continuation. The study findings suggest the feedback self-efficacy dimension of feedback orientation and overall feedback orientation are worth consideration by sporting organisations or coaches when targeting continued sports participation. An opportunity to retain athletes in sport exists, whereby organisations and coaches seek to understand and cater to athletes' individual differences in feedback orientation, whilst simultaneously working to improve athletes' perceived competence, enjoyment, feedback self-efficacy, and overall feedback orientation. Findings from the current study also provide support of the validity of intention as a measure for predicting continued sports participation. Furthermore, the present study offers both practical and academic contributions, and highlights areas for future research. Future studies should seek to further explore and refine feedback orientation in a sporting context, to examine the interaction between an individual's feedback orientation and the broader feedback environment and, lastly, to identify interventions and coaching methods which will develop and enhance feedback orientation and, in particular, feedback self-efficacy.

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Appendices

Appendix A – Participation Invitation Email

Good afternoon

My name is Jessie Hansen, and I am a student at the University of Canterbury. In partial fulfilment of the requirements for the degree of Master of Science in Applied Psychology, I am conducting a study investigating continued sports participation and sports-related feedback. One of the key aims of this research is to identify variables which may be able to be modified so as to retain players within their given sport.

This research requires players aged 18 and over to complete three surveys, separated by time. Each survey will take roughly 5 minutes, however, for the results to be viable players must complete all three surveys (15 minutes total).

I am writing to you in the hope that you might help me with the distribution of the 3 electronic surveys to players at your club.

This would include encouraging players to complete all of the surveys, and distributing an electronic link for each survey to all players via email, and social media.

The planned timeline for the distribution of each survey link is outlined below:

- The first survey will be sent out and will be live/accessible for players from 24 July to 3 August.
- The second survey will be sent out and be live/ accessible for players from 27 August to 4 September.
- The third survey will be sent out and will be live/accessible for players from 28 September to 5 October.

To encourage participation I would also be happy to pop in for a couple of minutes at the start of any trainings in the next couple of weeks if that suited?

If you would like any more information, please feel free to send me an email or give me a call. Also, please feel free to contact my supervisor Associate Professor Christopher Burt, who can be reached at christopher.burt@canterbury.ac.nz. He will be happy to discuss any concerns you may have about the project.

Please note for ethics purposes I am required to inform you that the results of the project may be published, however, you can be assured of the complete confidentiality and anonymity of the data gathered. All electronic data will be stored in a password-protected computer in a locked room, and no person outside of the research team will have access to data. Further, this project has been reviewed and approved under the policy of the University of Canterbury Human Ethics Committee, and as such participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Thank you!

Jessie Hansen

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Appendix B – Information and Consent Form

Participation Information and Consent Acknowledgement

This survey is one of a set of three surveys investigating feedback and sports participation. For data to be viable for this research you need to complete all three surveys. Note, each survey will take roughly 5 minutes. As a token of appreciation for your time, those who do complete all three surveys will go in a draw to win one of twenty \$50 Westfield vouchers.

The second and third surveys will be distributed in late August and late September, respectively.

You must be 18 years or older to complete the survey. Completion of the survey items implies consent to participate in the research, and to the publication of the results with the understanding that complete confidentiality will be preserved. The results of this research will be published in a dissertation, and may be published in academic journals or conference proceedings. You can be assured of the complete confidentiality of data gathered in this study, no information will be linked back to you. All electronic data will be stored in a password protected computer in a locked room, and no person outside of the research team will have access to data. A dissertation is a public document and will be available through the UC Library. Data will be destroyed after five years, unless a publication outlet requires extended archiving of the data.

The project is being carried out in partial fulfilment of the requirements for the degree of Master of Science in Applied Psychology at the University of Canterbury by Jessie Hansen under the supervision of Associate Professor Christopher Burt, who can be contacted at christopher.burt@canterbury.ac.nz. He will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved under the policy of the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Appendix C – Survey Questions

Demographic Questions

Please answer the following demographic questions. Note the anonymous identifying code will link data from this survey with the two surveys you will complete in the future.

- 1) Identifying Code: Please enter the first two letters of your mother's first name, the first letter of your own middle name and your day of birth in number format, in that order. (e.g. El J 26)
- 2) Please select your gender:
 - a. Male.
 - b. Female.
 - c. Gender Diverse.
 - d. Prefer not to say.
- 3) Please enter your year of Birth (e.g. 2001).
- 4) Please enter the main sport you play – enter the sport you primarily play, i.e. the sport you dedicate the most time to.
- 5) How many years have you been playing your listed main sport?.
- 6) What is the highest level you have played the sport? (Answer Format: 1- Any Club Team, 2 – Club team, 3 – Provincial Team e.g. Canterbury, 4- Other e.g. Maori, South Island, 5 – New Zealand or other National team).

Athlete Feedback Orientation Survey (A-FOS)

Please consider and answer the following questions about feedback in the context of your main/primary sport. It is important you answer as truthfully and accurately as possible. (1-Strongly Disagree to 5- Strongly Agree):

Utility Subscale

- 1) “Feedback contributes to my success in my sport”.
- 2) “To develop my skills in my sport, I rely on feedback”.
- 3) “Feedback is critical for improving my performance”.
- 4) “Feedback from my coach(es) can help me advance within the team”.
- 5) “I find that feedback is critical for reaching my goals”.

Accountability Subscale

- 6) “It is my responsibility to apply feedback to improve my performance”.
- 7) “I hold myself accountable to respond to feedback appropriately”.
- 8) “I don’t feel a sense of closure until I respond to feedback”.
- 9) “If my coach gives me feedback, it is my responsibility to respond to it”.
- 10) “I feel obligated to make changes based on feedback”.

Social Awareness Subscale

- 11) “I try to be aware of what other people think of me”.
- 12) “Using feedback, I am more aware of what other people think of me”.
- 13) “Feedback helps me manage the impression I make on others”.
- 14) “Feedback lets me know how I am perceived by others”.
- 15) “I rely on feedback to help me make a good impression”.

Feedback Self-Efficacy Subscale

- 16) "I feel self-assured when dealing with feedback".
- 17) "Compared to others, I am more competent at handling feedback".
- 18) "I believe that I have the ability to deal with feedback effectively".
- 19) "I feel confident when responding to both positive and negative feedback".
- 20) "I know that I can handle the feedback that I receive".

Perceived Competence Scale

Based on the main sport that you are currently playing, please rate how much you agree/disagree to each of the below statements. There are no right or wrong answers. We just want your honest opinion about the following statements.

(1-Strongly Disagree to 5- Strongly Agree)

- 1) I think I am pretty good at this sport.
- 2) I think I have played pretty well, compared to my teammates.
- 3) I am satisfied with my performances this season.
- 4) I am pretty skilled
- 5) I haven't played very well this season.
- 6) After working on my skills for a while, I feel pretty competent.

Sport Enjoyment Scale

Please select the answer which best reflects your feelings towards playing your selected primary/main sport this season.

(1-Not at all to 5- Very much):

- 1) "Have you enjoyed playing (your main sport) this season?"
- 2) "Are you happy playing (your main sport) this season?"
- 3) "Have you had fun playing (your main sport) this season?"
- 4) "Have you liked playing (your main sport) this season?"

Injury Measure Time 1

(0 – zero injuries to 5 – five plus injuries):

- 1) "How many injuries have you suffered in the last two seasons?"

Injury Measure Time 2 & 3

(Yes or No Answer):

- 1) Have you sustained any serious injuries since completing the last survey?

Intention to Continue in Sport Scale (ICS-S)

Please select the answer which best reflect your intention with regard to the main/primary sport you play. (1-Strongly Disagree to 5- Strongly Agree):

- 1) "If I had my own way, I will be playing this sport one year from now".
- 2) "I frequently think of quitting my sport".
- 3) "I am planning to play my chosen sport next season".

Sport Continuation Behaviours Measure (SCB-M)

Please select the answers which best reflect your behaviour with regards to continuing in your main/primary sport next year.

(1-Strongly Disagree to 5- Strongly Agree):

- 1) "I have chosen the club that I will play for next season".
- 2) "I have purchased or sourced, equipment to use next season (e.g. balls, boots)".
- 3) "I have talked to friends or family about what club I will play for next season".
- 4) "I have paid club fees".
- 5) "I have talked to other people in the club I intend to play for".

Coach Feedback Questionnaire (CFQ)

Coach Feedback Responses to Successful Performance

Listed below are six examples of feedback your coach might give you. Please rate each statement in terms of how typical it is for your coach to give you this kind of feedback after you have had a successful performance.

(1-Not at all to 5- Very much):

- 1) "Good play!"
- 2) Coach ignores your good performance.
- 3) "Way to go! You really went to the net this time."
- 4) "Great play. Now you're keeping your head up."
- 5) "Excellent work in practice today."
- 6) Coach doesn't say anything to you about your good performance.

Coach Feedback Responses to Poor Performance/Mistakes

Listed below are eight examples of feedback your coach might give you. Please rate each statement in terms of how typical it is for your coach to give you this kind of feedback after you have made a performance error, or had a poor performance.

(1-Not at all to 5- Very much):

- 7) "That's O.K. Keep working at it!"
- 8) Coach ignores your error or poor performance.
- 9) "That was a really stupid play!"
- 10) "You were on the wrong side of him. Next time stay on the defensive side."
- 11) "How many times have I told you to keep your head up."
- 12) "Hang in there! You will do better next time."
- 13) Coach doesn't say anything to you about your error or poor performance.
- 14) "Your technique looks lousy! Keep your head up."
- 15) "That play sucked!"
- 16) "You need to work on having quicker feet."


COVID-19 Impact Measure

(Yes or No Answer; Text Explanation):

- 1) "Have the restrictions imposed on sports during the COVID-19 pandemic, caused you to change your mind about continuing to play your sport next season?"
- 2) "If so, in what way and why?"

Appendix D – Example Survey Format

Figure 1. *Example of survey format used across all three surveys.*



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Please consider and answer the following questions about feedback in the context of your main/primary sport. It is important you answer as truthfully and accurately as possible.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I feel confident when responding to both positive and negative feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hold myself accountable to respond to feedback appropriately	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know that I can handle the feedback that I receive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to be aware of what other people think of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To develop my skills in my sport, I rely on feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feedback is critical for improving my performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using feedback, I am more aware of what other people think of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix E – Results of Factor Analyses

Table A

Factor loadings and communalities for athlete feedback orientation scale as derived from factor analysis^a

Item		Factor 1	Factor 2	Factor 3	h ²
1	“Feedback contributes to my success in my sport”.	.73	-.01	.09	.59
2	“To develop my skills in my sport, I rely on feedback”.	.74	.12	-.08	.59
3	“Feedback is critical for improving my performance”.	.77	-.08	.07	.60
4	“Feedback from my coach(es) can help me advance within the team”.	.42	.10	.14	.31
5	“I find that feedback is critical for reaching my goals”.	.75	.03	-.05	.55
11	“I try to be aware of what other people think of me”.	.09	.55	-.03	.34
12	“Using feedback, I am more aware of what other people think of me”.	.07	.64	-.01	.45
13	“Feedback helps me manage the impression I make on others”.	-.11	.76	.09	.54
14	“Feedback lets me know how I am perceived by others”.	-.02	.69	.03	.48
15	“I rely on feedback to help me make a good impression”.	.09	.56	-.05	.35
16	“I feel self-assured when dealing with feedback”.	.01	.09	.69	.51
17	“Compared to others, I am more competent at handling feedback”.	-.02	.14	.48	.27
18	“I believe that I have the ability to deal with feedback effectively”.	.12	-.08	.74	.60
19	“I feel confident when responding to both positive and negative feedback”.	.12	-.10	.64	.47
20	“I know that I can handle the feedback that I receive”.	-.07	-.02	.81	.60
Eigenvalue		4.59	1.64	1.01	
Percent of the variance (following extraction)		30.57	10.90	6.70	

Note. Figures in **bold** denote loadings above the .40 cut-off.

^a Principal axis factor analysis, oblimin rotation.

Table B

Factor loadings and communalities for intention to continue scale as derived from factor analysis^a

Item	Factor 1	h ²
1 If I have my own way I will be playing this sport one year from now	.59	.58
2 I frequently think of quitting my sport (R)	.59	.24
3 I am planning to play my chosen sport next season	.60	.70
Eigenvalue	1.51	
Percent of the variance (following extraction)	50.46	

Note. (R) = Reverse scored. Figures in **bold** denote loadings above the .40 cut-off.

^a Principal axis factor analysis, oblimin rotation.

Table C

Factor loadings and communalities for continuation behaviours measure as derived from factor analysis^a

Item	Factor 1	h ²
1 "I have chosen the club that I will play for next season".	.76	.58
2 "I have purchased or sourced, equipment to use next season (e.g. balls, boots)".	.43	.26
3 "I have talked to friends or family about what club I will play for next season".	.66	.44
4 "I have paid club fees".	.50	.25
5 "I have talked to other people in the club I intend to play for".	.48	.23
Eigenvalue	1.27	
Percent of the variance (following extraction)	42.27	

Note. Figures in **bold** denote loadings above the .40 cut-off.

^a Principal axis factor analysis, oblimin rotation.