



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

University of Wollongong  
Research Online

---

Faculty of Social Sciences - Papers

Faculty of Social Sciences

---

2012

# Exploring flow occurrence in elite golf

Christian F. Swann

*University of Wollongong*, [cswann@uow.edu.au](mailto:cswann@uow.edu.au)

Richard J. Keegan

*University of Lincoln*, [richard.keegan@canberra.edu.au](mailto:richard.keegan@canberra.edu.au)

David Piggott

*University of Lincoln*

Lee Crust

*University of Lincoln*

Mark F. Smith

*University of Lincoln*

---

## Publication Details

Swann, C., Keegan, R., Piggott, D., Crust, L. & Smith, M. F. (2012). Exploring flow occurrence in elite golf. *Athletic Insight*, 4 (2), 171-186.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library:  
[research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

---

# Exploring flow occurrence in elite golf

## **Abstract**

Research on flow (Csikszentmihalyi, 1975) has traditionally focused on reactive, externally-paced sports (e.g., tennis) without exploring those that are self-paced and stopstart in nature. This study investigated the occurrence of flow in a sample of thirteen elite golfers by conducting semi-structured interviews discussing: (i) their experiences of flow, (ii) factors that influenced flow occurrence, and (iii) the controllability of these experiences. Results shared similarity with existing research in terms of the majority of influencing factors reported, including motivation, preparation, focus, psychological state, environmental and situational conditions, and arousal, and that flow was reported to be at least potentially controllable. Golf-specific influences were also noted, including pre-shot routines, use of psychological interventions, standard of performance, and maintenance of physical state, suggesting that flow may have occurred differently for this sample. Findings are discussed and applied recommendations are made that may help golfers put relevant factors in place to increase the likelihood of experiencing flow.

## **Keywords**

elite, occurrence, golf, flow, exploring

## **Disciplines**

Education | Social and Behavioral Sciences

## **Publication Details**

Swann, C., Keegan, R., Piggott, D., Crust, L. & Smith, M. F. (2012). Exploring flow occurrence in elite golf. *Athletic Insight*, 4 (2), 171-186.

Running Head: FLOW OCCURRENCE IN ELITE GOLF

Title: Exploring Flow Occurrence in Elite Golf

Christian Swann, Richard Keegan, David Piggott, Lee Crust and Mark F. Smith

University of Lincoln, UK

Christian Swann, Richard Keegan, David Piggott, Lee Crust, and Mark F. Smith are with the School of Sport, Coaching and Exercise Science, University of Lincoln, Brayford Pool, Lincoln, Lincolnshire, United Kingdom, LN6 7TS. Correspondence concerning this article should be addressed to Christian Swann, Tel. + 44 1522 837102 or e-mail [cswann@lincoln.ac.uk](mailto:cswann@lincoln.ac.uk)

## **ABSTRACT**

Research on flow (Csikszentmihalyi, 1975) has traditionally focused on reactive, externally-paced sports (e.g., tennis) without exploring those that are self-paced and stop-start in nature. This study investigated the occurrence of flow in a sample of thirteen elite golfers by conducting semi-structured interviews discussing: (i) their experiences of flow, (ii) factors that influenced flow occurrence, and (iii) the controllability of these experiences. Results shared similarity with existing research in terms of the majority of influencing factors reported, including motivation, preparation, focus, psychological state, environmental and situational conditions, and arousal, and that flow was reported to be at least potentially controllable. Golf-specific influences were also noted, including pre-shot routines, use of psychological interventions, standard of performance, and maintenance of physical state, suggesting that flow may have occurred differently for this sample. Findings are discussed and applied recommendations are made that may help golfers put relevant factors in place to increase the likelihood of experiencing flow.

Keywords: sport psychology, optimal experience, qualitative, elite athletes, self-paced sport.

### Exploring Flow Occurrence in Elite Golf

The term flow is used to describe a harmonious and intrinsically rewarding state of effortless excellence, in which one is completely absorbed in an activity, attention is totally invested, and the person functions at his/her fullest capacity (Csikszentmihalyi, 1975; 1990). Flow has been reported in domains ranging from surgery to art and music, as well as everyday activities such as reading (Csikszentmihalyi, 1990). However, because both performance and experience are believed to be enhanced in flow (Jackson & Roberts, 1992), this area of research is particularly relevant in sport.

Csikszentmihalyi outlined nine different dimensions of flow, and it is the experiencing of several of these characteristics together that makes the flow experience so special (Jackson, 1996). Flow usually occurs in situations of *challenge-skills balance*, where one subjectively perceives that the situation he or she is in requires them to extend beyond their normal capabilities, but is still achievable. Hence they require specific, *clear goals* to strive to achieve, while also receiving *unambiguous feedback* that either informs them that they are progressing towards these goals or tells them how to adjust in order to do so. Therefore, the individual requires complete *concentration on the task at hand*, with no extraneous or distracting thoughts, which can also lead to *action-awareness merging*, whereby the person becomes totally absorbed or immersed in the activity. A *loss of self-consciousness* can also occur in the form of an absence of negative thoughts or doubt, as can a *sense of control* over the performance or outcome of the activity, and a *transformation of time*. The combination of these first eight dimensions makes the flow experience enjoyable and intrinsically rewarding, making up the ninth dimension which Csikszentmihalyi (1975) termed *autotelic experience*.

However, because flow is such a subjective experience, it is acknowledged as being difficult to accurately and reliably measure and no approach is trouble-free (Kimiecik & Jackson, 2002; Kimiecik & Stein, 1992). Approaches such as the Experience Sampling Method (Csikszentmihalyi & Larson, 1987) and the Flow Scale questionnaires (Jackson & Ecklund, 2004) have been noted as problematic to the exploration of flow states (see Kimiecik & Jackson, 2002; Kimiecik & Stein, 1992); however, the exploration of subjective experience lends itself to qualitative methods. A qualitative approach can provide important information regarding the subjective nature of flow experience and can overcome quantitative restraints, providing information, interpretation, and understanding of flow phenomena from an athlete's point of view (Stavrou, Jackson, Zervas, & Karteroliotis, 2007). Hence "valuable and often reliable information comes from athletes' subjective description and interpretations" (Chavez, 2008, p.72), and qualitative, open-ended interviews are the most widely used and appropriate method of exploring these elusive experiences (e.g., Chavez, 2008; Jackson, 1992, 1995, 1996; Sugiyama & Inomata, 2005).

This existing qualitative research on flow occurrence in sport has tended to explore the factors perceived to influence (i.e., facilitate, prevent, and disrupt) these states, as well as investigate their controllability (e.g., Chavez, 2008; Jackson, 1995, 1996). Elite athletes, defined by Jackson and Kimiecik (2008) as "those who participate in U.S. Division 1 collegiate sport or higher" (p. 508), have primarily been used because: (i) they have been involved in competitive situations for substantial amounts of time (Jackson, 1996); and (ii) are theoretically more likely to perform in states of automaticity without the need for conscious thought (Hatfield & Hillman, 2001), which may make it easier to become absorbed in the activity and experience

flow. This means that elite athletes are likely to be more familiar with these experiences than recreational participants.

Furthermore, certain sports may be more conducive to flow than others: “a structured type of event, and one that is continuous in nature may facilitate flow, in comparison to more unstructured, stop-start events where there are potentially more uncontrollable factors for the athlete to deal with” (Jackson, Thomas, Marsh, & Smethurst, 2001, p.149). Hence, it could be the case that such stop-start sports are less conducive to flow than other sports, and that flow occurs differently in these sports than more structured events. However, existing research (e.g., Jackson, 1992, 1995; Chavez, 2008) has used athletes from sports that are faster and externally paced, and have not yet focused specifically on slower, self-paced sports (Singer, 2002). Previous literature has also tended to combine athletes from various team and individual sports in one sample (e.g., Chavez, 2008; Jackson, 1995, 1996; Russell, 2001), or combine athletes from different forms of one sport (e.g., singles and pairs athletes in Jackson, 1992; Young, 2000). Instead, a sample isolating one single context of athletes is likely to provide a more specific understanding of flow occurrence in that context, in turn providing athletes and coaches within that domain with more specific and relevant information.

One such self-paced sport from which it is possible to isolate a single context of athletes is golf. Elite golfers compete individually, and commonly in tournaments involving up to 150 players. This provides a suitable setting to gain potential access to a sample of players competing in the same sport and at the same level. It has also been suggested that the game of golf is heavily reliant on the mental and emotional control at the highest level, illustrated by the anecdotal quote: “Golf is “90% mental. The other 10% is mental” (Flick & Waggoner, 1997, p.43). This could be because of the

self-paced nature of golf, which affords the player time for potential over-thinking, distraction, perceptions of inadequacy, overly elated emotions such as anxiety or fear of failure, and possibly even ironic processes (e.g., thinking about not hitting the ball in a bunker near the green while standing over the ball, and then doing just that; Singer, 2002). Therefore, golf is an interesting domain in which to study the occurrence of optimal psychological states such as flow.

Two empirical studies have been conducted in this area (Cohn, 1991; Catley & Duda, 1997). Cohn (1991) interviewed 19 competitive golfers ranging from NCAA Division 1 collegiate players to PGA Tour professionals about their peak performances, which he defined as a time when they were playing to the best of their ability and shot their best score. While some of the results resonated with dimensions of flow experiences (e.g., narrow focus, automatic and effortless performance, immersion, sense of control), differences between flow and peak performance have been suggested (see Jackson & Kimiecik, 2008; Jackson & Roberts, 1992). Therefore these results may be relevant to elite golfers, but do not focus explicitly on experiences of flow. Catley and Duda (1997) administered questionnaires to 163 recreational golfers in order to assess pre-round readiness variables and frequency and intensity of flow post-round. Results suggested that pre-round readiness was significantly related to the experience of flow, as was skill level. This suggests that elite participants are the most appropriate sample from whom to gain rich descriptions of flow experiences. It also appears that elite golf has not been explored previously in flow research, highlighting the need for an exploratory investigation to help establish an understanding of flow experiences in this domain.

Therefore, using qualitative, semi-structured interviews in order to gain rich accounts and insights, this study aimed to investigate the occurrence of flow

specifically in elite golf, and explore whether flow could occur differently in golf than in the faster paced and more generic sports studied previously. Although it is acknowledged that flow research in sport needs to go beyond description of the elements of a flow experience and begin explaining the occurrence of these states (Kimiecik & Stein, 1992), this study also aimed to be exploratory in nature, intending only to establish a description rather than attempting to explain flow. In doing so, it followed the example of previous studies of flow in other elite sports (e.g., Jackson, 1992; Young, 2000). It is hoped that once this introductory understanding is established, future studies can build upon this and begin to investigate “the potential psychosocial mechanisms and variables that may be causally related, or, at the very least, positively or negatively associated with the flow experience” (Kimiecik & Stein, 1992, p.149).

## **Method**

### **Participants**

This sample included 13 male professional golfers from the Republic of Ireland, Northern Ireland, and England. These individuals had competed internationally in either European Tour ( $n = 8$ ), Challenge Tour ( $n = 4$ ), or Europro ( $n = 1$ ) tournaments. The European Tour is the flagship professional golf tour in Europe, and one of the major tours worldwide, involving world-class playing standards and the highest level of competition; just below this standard is the Challenge Tour, a European-based developmental Tour used as a training ground for promotion to the European Tour (PGA European Tour, 2010); and the Europro Tour is another European-based developmental Tour that is used as a training ground for promotion to the Challenge Tour. These participants had a mean age of 33.5 years ( $SD = 9.28$ )

ranging from 20 to 51 years, and mean of 11.8 years experience as a professional ( $SD = 10.28$ ) with a range of 1 to 32 years.

### **Procedure**

Ethical approval for the study was granted by the departmental ethics committee at a British university. Nine of the participants were approached at two Professional Golfer's Association (PGA) Irish Region pro-am tournaments, and were asked to take part in a study exploring the occurrence of flow in elite golf. This setting was chosen because it provided access to a large number of competitive professional golfers at the same time and in one location. Initially, one professional known to have competed on the European Tour was approached and agreed to take part. This process snowballed, and more participants were interviewed until a point was reached where no new information or themes were observed in the data (Lincoln & Guba, 1985). Hence, a mixture of purposive (Patton, 2002) and snowball sampling were used to obtain participants.

Due to this tournament setting, time spent with these players was limited and the interviews were kept purposeful and concise. In order to obtain more data, the other four participants in the sample (independent of these original interviews) later took part in member-checking discussions away from a tournament setting (see p. 9).

### **Interview guide and protocol**

An interview guide was developed based on previous qualitative research on flow in sport (e.g., Chavez, 2008; Jackson, 1992, 1995; Russell, 2001), and pilot-tested on two amateur golfers with handicaps of one and three before the present sample was interviewed. The pilot study led to changes in the wording of questions, providing a clear explanation and definition of flow at the beginning, and expanding the scope of the interview from one isolated experience to the golfer's general

experience of flow in golf in order to gather more data. This concise guide adopted a semi-structured, open-ended approach to ensure that sufficient relevant data could be collected through the use of further probing questions where necessary, while also permitting the participant to elaborate and develop areas of perceived importance (Patton, 2002).

All participants gave written consent after the researcher explained the purpose of the study and asked for permission to audiotape the interview. The interviewee's age and number of years' experience as a professional was ascertained, before discussing the highest standard at which he had competed. Following explanation of the concept of flow as an experience that "felt like everything clicked into place on the golf course, or that you were playing on auto-pilot", the participants were asked to describe a performance in which they had one of these experiences. They were then asked three questions relating specifically to the occurrence of flow, in terms of what factors: (i) facilitate flow experiences, (ii) disrupt these states, and (iii) prevent flow from occurring more often. Finally, the interviewees were asked to discuss whether or not they perceived flow to be a controllable state.

The interviews were conducted face to face; were digitally recorded, while brief notes were also taken; ranged between 8 and 25 minutes ( $M = 14.22$ ,  $SD = 5.33$ ); and were later transcribed verbatim. Following this, member checking (Lincoln & Guba, 1985) was conducted in order to increase trustworthiness. This process involves taking data and interpretations back to the participants so that they can confirm the credibility of the information by asking if the themes or categories make sense, whether they are developed with sufficient evidence, and whether the overall account is realistic and accurate (Creswell & Miller, 2000). Member checking took place in two stages: first, the transcripts and a copy of the results were returned to the original

nine interviewees for verification. None of these golfers reported any problems, and deemed the transcripts to be an accurate reflection of the interviews that took place. Second, follow-up member checking discussions were conducted with the other four participants, and there was no disagreement between these discussions and the data originally obtained.

### **Analysis**

The investigator was sensitised to the game of golf through a number of years' experience at a relatively high amateur standard, and was hence familiar with the terminology used by these participants. This author was most familiar with the data and conducted an exploratory analysis, reading the transcripts and recording the in-vivo codes, before using open then axial coding (Strauss & Corbin, 1998) to establish salient *concepts*, and integrating these around core *categories*. In order to increase trustworthiness, a process of establishing inter-rater reliability was undertaken. This involves giving the same data to a number of analysts and asking them to analyse the data according to an agreed set of categories (Silverman, 2001). In the present study, the second and fourth authors separately and independently analysed the transcripts and generated codes, concepts, and categories in order to establish inter-rater reliability. There was a high level of agreement between all analyses, and where differences emerged, these were discussed and clarified in accordance with Silverman (2001). After this initial analysis was compiled, it was given to the third author (independent to the data until this point) for subsequent analysis, who provided feedback relating to the coding and labelling of concepts and categories.

### **Results**

Data are presented in terms of the categories that (i) facilitate, (ii) prevent, and (iii) disrupt flow occurrence, as well as (iv) the controllability of these experiences, as

perceived by elite golfers. In line with recommendations for qualitative research, quotes are used in order to let the participants' voices emerge and describe these experiences through the eyes of the elite golfer (Silverman, 2001). Each participant will be referred to by a pseudonym randomly chosen and assigned by the investigator.

### **Golfers' Descriptions of Flow**

Participants provided rich insights into their experiences of flow in elite golf. Rory described flow as "basically a state of mind where nothing can go wrong. You're just comfortable in everything you're doing, and you think you can't wait to go and play the next shot, and just everything comes very easily." This alluded to a sense of automaticity that other researchers have associated with flow (e.g., Canham & Wiley, 2003), which Luke also referred to: "You don't think about anything at all, you just kind of play golf. You get your yardage, you aim and that's it. You're sensing what to do with the putts, not thinking it." This sensory element was further illustrated by Paul;

I could just see the ball, you know I had great visualisation on it. I could hear the ball hit the bottom of the hole, I could hear it coming off the putter, I could nearly hear it scraping across the grass...it was really, really like, magnified to me.

These responses resonate strongly with Csikszentmihalyi's flow theory, suggesting that this sample of elite golfers were aware of, and had experienced, flow states.

### **Factors Influencing Flow Occurrence**

Emerging from the analysis were eleven facilitators, six preventers, and four disruptors of flow for this sample of elite golfers; these are presented in Tables 1, 2, and 3, as well as the number of interviewees reporting each category. This section is

structured around these tables: the categories are discussed below in relation to the concepts from which they are comprised.

### **Factors Facilitating Flow Occurrence**

*Motivation to Perform* related to the players' desire to perform well or achieve their goals in the event they were about to compete in. Events that challenged them more than normal were particularly facilitative, as discussed by Luke: "the bigger the competition for me, the more immersed you get."

*Effective Preparation* was an important facilitator of flow, as illustrated by Oliver, who noted that "performance is always reflected in the practice...the zone is really just a reflection of how your preparation has been." Such preparation was physical and mental in nature, while efficient organisation in terms of planning and scheduling helped prevent fatigue and burn-out.

*Appropriate Focus* represented a state of heightened but specific focus, in which the player is concentrating in the moment and on the task at hand. James discussed the influence of this factor, and perceived a close relationship between focus and being in flow: "When I'm really focused that makes it easy to get in the zone. To me there's not much difference between being really focused and in the zone." The concept of process or task focus also appears to revolve around the next shot these golfers face, as described by Nick: "I never ever think about the previous shot I've hit, whether it be good or bad...the next shot is the most important shot."

*Positive State* referred to the positive, enjoyable, and harmonious characteristics associated with flow, as Matt illustrated: "That's definitely when I play my best...when I'm perfectly happy on the course...I'm just enjoying being there". Other golfers referred to being "comfortable" or in a "comfort zone."

Table 1

*Factors found to facilitate flow*

Concepts	Categories	Number of participants
Bigger competition	Motivation to perform	4
Personal challenges/negative motivation		
Motivating self talk	Effective preparation	7
Pre-round preparation		
Golf-specific practice/preparation		
Mental preparation		
Efficient organisation		
Practice for tension/pressure		
Form/recent success	Appropriate focus	9
Heightened focus and concentration		
Focus on present and immediate future		
Lack of extraneous thought	Positive state	6
Enjoyment		
Mentally positive		
Rhythm/tempo		
Comfort zone	Letting it happen	6
Surrender/letting go		
Confidence		
Trust/belief in self		
Acceptance		
Sense of freedom	Psychological interventions	5
Positive self talk		
Breathing exercises		
Visualisation	Optimal environmental and situational conditions	3
Comfortable in personal life		
Comfortable in surroundings		
Positive perception of the course or conditions		
Adrenaline	Optimal arousal	3
Feeding off nerves		
Calm/relaxed		
Hydration	Maintenance of physical state	2
Snacking		
Pre-shot routine	Pre-shot routine	7
Physical cues		
Target oriented focus		
Commitment to the shot/confidence in shot selection		
Pre-shot visualisation		
Pre-shot self-talk		
Playing well	Playing well	7
Hitting good shots		
Swinging well		
Momentum		

*Letting it Happen* relates to the paradoxical nature of flow, and was illustrated by Oliver: “Because you’re not looking for (flow) you’re more likely to make it happen”, and Jack: “When you’re in the zone just let it happen, don’t try to fight it or rush it, just go with the flow.” With this comes a sense of freedom in terms of playing and swinging freely, and an element of acceptance in that bad shots don’t matter as much and are much easier to recover from when in flow.

*Psychological Interventions* referred to techniques or exercises that these players used to maintain an optimal state during the period between shots, when distractions or disrupting influences were likely to occur. Hence this category appears to be a golf-specific difference due to the nature of golf. These interventions were generally used to reduce tension and maintain concentration, and included positive self-talk and visualisation, while breathing exercises were used most widely used. These involved slow, deep, diaphragmatic breathing, the importance of which, were discussed by Jack: “It’s impossible to be nervous when you’re breathing correctly...when you’re breathing correctly you’re in a relaxed state of mind.”

*Optimal Environmental and Situational Conditions* referred to elements outside of the actual performance that were favourable for the athlete, and in turn facilitated flow. These could be outside of golf, such as their personal life: “If everything else is comfortable, like your family, whatever, money wise, then I think it’s a lot easier to get in the zone” (Rory). Being comfortable in your surroundings was also facilitative, such as returning to a place or course that you like or have played well on before. Or if the player has been used to tougher conditions, a perception that the present course or conditions are easier can lead to a sense of positivity, and similarly facilitate flow.

*Optimal arousal* varied depending on the golfers' individual differences, and was hence very personal. For some, a more energised state involving adrenaline, and feeding off nerves facilitated flow, relating to optimal motivation/challenge in that “you have to be nervous to get in the zone” (James). For others, a more calm/relaxed state facilitated flow, e.g. Luke, who said that “when I find I'm relaxed I find it much easier.”

*Maintenance of Physical State* was comprised of the concepts snacking and hydration, which enabled these participants to function properly throughout their rounds, which can last up to five or even six hours at the elite level. For example, Luke stated that “just being hydrated enough helps...if I'm not, I tend to find (that) physically I get tired or just lose focus a little bit.” Again, this was a golf-specific difference due to the nature of golf.

*Pre-Shot Routine* described the process through which these golfers execute each shot, which appeared to help the player get into an optimal frame of mind immediately prior to and during the execution of the shot. The link between these pre-shot routines and flow was described by Paul: “The pre-shot routine for me is what triggers (flow)...the one thing that allows you to get into that frame of mind.”

These routines were also very individual: for some, triggers or physical cues were used to start their routines: “anything to say ‘show time’” (Oliver); while a narrow, specific focus on the target was also important, illustrated by Luke: “When I feel like I'm in the zone...all I think about when I'm hitting the shot is “target”...I can kind of picture the shot before I hit it, and then all you have to do is aim.” Most of these golfers also referred to pre-shot visualisation, in being able to picture the shot before they hit it, while pre-shot positive self talk was also an important factor for

some players. A final concept was that of committing to the shot and being absolutely certain about the shot they want to hit before beginning their routine.

*Playing Well* described the players' awareness that their overall performance was going to plan and they were on track to achieve their goals. The concepts of swinging well and hitting good shots helped the players feel like they were performing well, and in turn facilitated flow. Some players also discussed a link between psychological momentum and flow. For example, Matt described that if you "start to hit good shots that drags you into the zone", and Oliver discussed that "you do get absorbed in the moment, you get competitive and momentum builds."

Table 2

*Factors found to prevent flow*

Concepts	Category	Number of participants
Non-optimal playing conditions	Non-optimal environmental and situational conditions	6
Problems in personal life		
Organisational stressors		
Playing partners		
Opposition		
Negative perception of the place/course	Non-optimal preparation and readiness	6
Lack of practice/preparation		
Rushing preparation		
Physical problems	Negative state	5
Lack of confidence/self-belief		
Anxiety		
Negative attitude		
Fear/worry	Lack of, or inappropriate, focus	5
Mind drifting		
Lack of focus		
Inappropriate thinking	Non-optimal motivation	3
Excessive motivation		
Lack of motivation	Not playing well	3
Getting off to a bad start		
Not performing as well as you could		

**Factors Preventing Flow Occurrence**

***Non-optimal Environmental and Situational Conditions*** referred to interfering elements outside of the golfer's control. Non-optimal playing conditions could prevent flow, either through tough weather or course-set up, as could a negative perception of the place or course, particularly if the player hasn't played well there previously. For some golfers, competing against better opposition could prevent flow by distracting them from their own performance and focusing more on the presence of these competitors. Similarly, playing partners were also reported as being able to prevent flow experiences, especially those in pro-am tournaments such as amateurs and high-handicappers. Non golf-related factors could also prevent flow, including problems in your personal life (e.g., breaking up from a long-term relationship), or organisational stressors (e.g., doing a lot of travelling or having another job, such as coaching) that take time and focus away from golf.

***Non-optimal Preparation and Readiness*** captured two subcategories; first, *lack of practice/preparation*: "Fail to prepare, prepare to fail, right? If you're not (prepared)...you're on the golf course and it might take you a couple of holes to get basically where you should be...it could be gone at that stage" (Jack). Similarly, *rushing preparation* was reported to have a preventative effect, and *physical problems* such as lethargy, illness or fatigue were also reported to prevent flow experience.

***Negative State***, comprising of *lack of confidence/self-belief*, *anxiety*, *negative attitude*, and *fear/worry*, also prevented flow from occurring. This category was summarised by Matt: "If you're worried about failing, or worried about what other people think, or worried about succeeding...whatever you're afraid about, if you let that affect your performance then you're not playing to your full ability."

***Lack of, or Inappropriate, Focus*** contained the themes *mind drifting*, *not being focused*, and *inappropriate thinking*. Participants mentioned both over-

analytical and negative thinking as being able to prevent their flow experiences, illustrated by Nick's quote that:

(if) your second shot is a 3 iron to a green that has water all the way around it, or a green that has out of bounds right and left and long, and bunkers everywhere, it's very difficult not to think about the trouble.

***Non-optimal Motivation*** combined concepts of either a *lack of motivation* or *excessive motivation*. Some golfers discussed that a lack of nerves or challenge prevented their flow experiences, while others talked about 'forcing it' and trying too hard, as Jack discussed: "you're never in the flow when you're forcing it".

***Not playing well*** referred to the players' performance being below the standard required for them to achieve their goals in that event. This suggests that it is difficult or impossible to get into flow while performing badly, which is perhaps unsurprising considering the link between flow and peak performance.

Table 3

*Factors found to disrupt flow*

Concepts	Category	Number of participants
Inconsistent weather Stoppage in play Change in pace of play Distracting interactions with others "Normal" distractions Don't like the shot shape or hole Bad Luck	Non-optimal environmental and situational conditions	5
Loss of Focus Awareness of the situation Negative focus	Loss of, or inappropriate, focus	4
Fear/worry Anxiety	Negative state	3
Loss of self-belief Feeling uncomfortable about hitting it Not committing to the shot Rushing the shot Getting out of routine.	Hitting bad shots	3

## Factors Disrupting Flow Experience

*Non-optimal Environmental and Situational Conditions* referred to factors external to the golfer that interrupted their experiences, and included concepts such as *inconsistent weather* in terms of wind and rain, and *change in pace of play* (e.g., rushing). Stoppages in play were discussed as being particularly disruptive:

you're leading a tournament, you're in the zone, you're focused, and all of a sudden...it's called off for a period of time, then your mind starts to go again. You've lost your focus, you've lost your zone. So I think a stoppage in play (is) a nightmare (James).

Furthermore, other golfers noted that coming across a shot or hole that they disliked could affect their focus and disrupt flow, as could “*normal*” *distractions* (such as sudden noises), *distracting interactions with others*, and *bad luck*. The concepts in this category disrupted flow by distracting the player from the task at hand.

*Loss of, or Inappropriate, Focus* also disrupted flow experiences for these golfers, and could occur relatively easily, as Paul described: “your head drifts to a lot of different places because you have so much time.” *Becoming aware of the situation* was also a disrupting theme that caused the players to realise how well they were performing and lose focus on the task at hand (e.g. by thinking ahead to outcomes of the performance). Luke also discussed the effects of *negative focus* in terms of seeing the danger on holes: “If you kind of see danger you start focusing on that...and it's harder to focus on the target.” This category relates to focusing on variables irrelevant from the task at hand, which could then lead to playing the next shot badly.

*Negative State* referred to negative thoughts and feelings that could occur during the flow or over a shot, which then disrupted the experience, including the concepts *fear/worry*, *anxiety*, and *loss of self-belief*. This factor could be caused by

other disrupting influences (e.g., inappropriate focus) or could be related to the situation that the player is in (e.g., the last hole in a tournament) as Oliver noted: “sometimes we cannot trust. It’s the biggest contradiction in golf. Like the 18<sup>th</sup>, I hit it out of bounds yesterday. The very time you should be standing there trusting yourself, you cannot do it.”

*Hitting Bad Shots* described the (flawed) process that the golfer goes through in performing the shot, and combined concepts of *feeling uncomfortable about hitting it, not committing to the shot, rushing the shot, and getting out of routine*. These processes could then result in negative outcomes for that shot (e.g., finishing in a difficult position such as a bunker), in turn leading to negative emotions (e.g., anger), which the player may struggle to recover from. This can then disrupt flow.

### **Controllability of flow**

Four of these elite golfers (Oliver, Alex, Rory, Luke) explicitly stated that they perceived flow to be controllable, providing responses such as: “I would think you could help induce it” (Oliver). The other five participants alluded to similar control: James suggested that “I think you can practice and improve it” through exercises designed to increase focus, and motivational talks; Matt believed that “it’s definitely possible to intervene”; Paul felt that he would be able to control flow “if I was conditioned from a younger age”; Jack suggested that breathing exercises and effective use of psychology could help; while Nick believed flow could be controlled, “but the only way to do that is by winning.” These perceptions were, once again, highly individual.

### **“Negative flow”**

Emerging from the data was a concept of “negative flow” opposite to the optimal experience, which two golfers alluded to: Rory noted that “you always get

into a rhythm when you're on the golf course, whether it be a bad or a good one"; and Jack reported that "you could start off with 3 bogeys or something and all of a sudden that's the flow you're in then...you're on the back foot straight away" and on certain occasions "people know that "oh this is going to be a struggle"...negative flow starts going, and all of a sudden (the performance) goes the other way."

### **Discussion**

This study aimed to establish a description of how flow occurred within a sample of elite golfers, and suggest whether flow may occur differently in golf than in previously researched sports due to golf's self-paced nature. While explicit comparison is difficult because each previous study has presented and labelled their findings differently, the main concepts found to influence flow in elite sport thus far relate to preparation, mental attitude, focus, motivation, arousal, and environmental and situational conditions (Jackson, 1992, 1995; Young, 2000; Sugiyama & Inomata, 2005; Chavez, 2008). These were also found in the present study, which suggests there are similarities between the occurrence of flow for these elite golfers and the previously researched sports. Similarly, these findings suggest that this sample of golfers perceived flow to be at least potentially controllable, as has been the case with previous research (e.g., Chavez, 2008; Jackson, 1995; Sugiyama & Inomata, 2005).

However, a number of differences were also apparent within this sample. The use of pre-shot or pre-task routines does not appear in extant literature exploring flow in elite sport. These routines helped these golfers achieve an optimal internal state prior to performing each shot, and were perceived by the golfers to be an important facilitator of flow, a suggestion supporting that of Singer (2002). This sample also reported that hitting good shots, playing well and momentum facilitated the occurrence of flow. Due to the period of time between shots, it could be the case that

flow occurrence is linked to a build up of momentum in golf. Singer (2002) supports this link by proposing that pre-shot routines are immediately followed by evaluation and feedback, that then leads back into preparation for the next shot, and hence there is a cyclical element within the use of pre-shot routines that could build momentum. Landsberger and Beauchamp (1999) attempted to establish indicators of performance momentum during a competitive round of golf using a system that quantified momentum gains and losses relative to expectations for each stroke and hole. Although they made no link to flow, such a system could be useful for exploring the relationship between flow and momentum in future research.

Situational conditions outside of golf influenced flow occurrence for these athletes, which does not appear to have been reported by existing literature. This finding also differs from Kimiecik and Stein's (1992) Person x Situation Flow Framework which suggested that only situational factors within sport could influence flow. This could be a golf-specific difference in how flow occurs possibly due to the lengthy periods between shots, during which players have time to dwell on these situational conditions (e.g., problems in their personal life). This is less likely to be the case in more reactive, externally paced sports.

The discussion of a "negative flow" by some of these participants also raised questions. Csikszentmihalyi (1990) has discussed *psychic entropy* as an antithesis of flow, "a disorganisation of the self that impairs its effectiveness...(which) can weaken the self to the point that it is no longer able to invest attention and pursue its goals" (p.37). While extensive research has been conducted on negative aspects of experience within sport, such as anxiety, burnout, and stress (Jackson, 1992), it does not appear that any has focused on the most negative states experienced by athletes during performance. Therefore, future studies could begin investigating if, and how,

psychic entropy or “negative flow” is experienced in sport, and whether it relates only to golf or other sports as well.

Another suggestion was that of hydration and snacking in order to maintain energy and concentration levels, which has also been identified in previous physiology literature. For example, Smith (2010) discussed that “the onset of mental and physical fatigue through inadequate and/or inappropriate dietary practices will have a significant impact on the player’s ability during performance” (p. 643). Therefore it appears to be logical that sufficient energy levels could have an impact on flow states in golf. The use of psychological interventions between shots to help maintain an optimal mental and physiological state was also reported, including self-talk, visualisation, and breathing exercises. These abdominal breathing exercises discussed by the players resonate with centering (e.g., Haddad & Tremayne, 2009), which has been reported to yield physical balance, help the individual to focus prior to a task, and help control physiological arousal (Nideffer, 1994; Nideffer & Sagal, 2006). It seems reasonable that such exercises could be beneficial to golf performance and flow states, and these links should be explored in future. These could all be golf-specific differences due to the time available between shots, which is not the case in the previously researched sports.

### **Applied Recommendations**

Similar to those of Jackson (1992) and Young (2000), applied recommendations for athletes, coaches, and practitioners revolve around putting relevant factors in place to improve the likelihood of flow occurring for golfers. This involves: (i) the promotion of controllable facilitators, (ii) negating controllable preventers and disruptors, and (iii) the practicing of re-focusing strategies to overcome any distractions that may occur.

Setting challenging but achievable goals for an event is one way that the athlete can achieve optimal motivation. These, combined with effective physical and mental preparation, could facilitate challenge-skills balance whereby athletes enter the event believing that they can achieve their goals if they perform at the best of their ability. During the event, the use of psychological skills are encouraged to help the athlete maintain an optimal internal state, particularly between shots; as are snacking and hydration, in order to help the golfer maintain energy and concentration levels throughout the round. Golfers are also advised to employ individualised pre-shot routines. These should foster external focus on the target (Bell & Hardy, 2009), and could use physical cues or triggers, visualisation and self talk, essentially aiming to help golfers feel completely confident and focused before they hit each shot.

Following these recommendations should help minimise controllable preventing and disrupting categories, such as non-optimal preparation and readiness, non-optimal motivation, and ineffective execution of the shot. However, golfers are also advised to develop re-focusing strategies in order to cope with any distractions that do arise prior to or during the event; Orlick's (2007) recommendations for distraction control would be especially useful in this regard. These golf-specific data and recommendations may be useful for golfers, coaches, and psychologists to help prepare in ways that could increase the likelihood of experiencing flow.

This study aimed to introduce the concept of flow to elite golf. Findings suggest that flow may occur slightly differently for this sample of elite golfers than has been the case for previously researched sports. However, it should be noted that these findings are only discussed in relation to this sample and the methods used in the present study, and that they do not suggest causality. If the results of this study do generalise to elite golf in general then future research could conduct similar studies

with different samples. For example, all of the participants in this study were male, and further research could explore and compare the flow experiences of female professional golfers. Furthermore, the eight players from this sample who had competed on the European Tour did so only on certain occasions (e.g., via invitation). This means that although the golfers in the present study were elite, they did not perform regularly at the highest level possible and there could be differences between these professionals and more elite, full-time members of the European Tour. Therefore further research should seek to explore the flow experiences of full-time European Tour players, and could provide insight into flow at the very highest level of the game (e.g., winning European Tour tournaments) and add richer data to that of the present study (e.g., in terms of possible controllability of flow). Similarly, such an exploration could highlight similarities and differences between flow experiences at each level, and could therefore provide applied recommendations relevant for professional or elite-amateur golfers aiming to reach the European Tour.

## References

- Bell, J.J., & Hardy, J. (2009). Effects of attentional focus on skilled performance in golf. *Journal of Applied Sport Psychology, 21*, 163-177.
- Canham, M. & Wiley, J. (2003). When time flies: Effects of skilled memory on time transformation in rock climbers. *International Journal of Cognitive Technology, 8*, 26-34.
- Catley, D., & Duda, J. (1997). Psychological antecedents of the frequency and intensity of flow in golfers. *International Journal of Sport Psychology, 28*, 309-322
- Chavez, E.J. (2008). Flow in sport: A study of college athletes. *Imagination, Cognition and Personality, 28*, 69-91.
- Cohn, P.J. (1991). An exploratory study on peak performance in golf. *The Sport Psychologist, 5*, 1-14.
- Creswell, J.W., & Miller, D.L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*, 124-130.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco: Jossey-Bass.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the Experience-Sampling Method. *Journal of Youth and Adolescence, 6*, 281-294.
- Flick, J., & Waggoner, G. (1997). *On golf: Lessons from America's master teacher*. New York, NY: Villard.
- Haddad, K., & Tremayne, P. (2009). The effects of centering on free-throw shooting performance of young athletes. *Sport Psychologist, 23*, 118-136.

- Hatfield, B.D., & Hillman, C.H. (2001). The psychophysiology of sport: A mechanistic understanding of the psychology of superior performance. In R.N. Singer, H.A. Hausenblas, & C.M. Janelle (Eds.), *Handbook of sport psychology* (pp. 362-386). New York: Wiley.
- Jackson, S. (1992). Athletes in flow: A qualitative investigation of flow states in elite figure skaters. *Journal of Applied Sport Psychology*, 4, 161-180.
- Jackson, S. (1995). Factors influencing the occurrence of flow state in elite athletes. *Journal of Applied Sport Psychology*, 7, 138-166.
- Jackson, S. (1996). Toward a conceptual understanding of the flow experience in elite athletes. *Research Quarterly for Exercise & Sport*, 67, 76-90.
- Jackson, S. A., & Ecklund, R. C. (2004). *The Flow Scales Manual*. Morgantown, WV: Fitness Information Technology.
- Jackson, S.A., & Kimiecik, J. (2008). The flow perspective of optimal experience in sport and physical activity. In T. Horn (Ed.), *Advances in sport and exercise psychology* (3rd ed., pp.377-399). Champaign, IL: Human Kinetics.
- Jackson, S., & Roberts, G. (1992). Positive performance state of athletes: Towards a conceptual understanding of peak performance. *Sport Psychologist*, 6, 156-171.
- Jackson, S.A., Thomas, P.R., Marsh, H.W., & Smethurst, C.J. (2001). Relationships between flow, self-concept, psychological skills, and performance. *Journal of Applied Sport Psychology*, 13, 201-220.
- Kimiecik, J., & Jackson, S.A. (2002). Optimal experience in sport: A flow perspective. In T. Horn (Ed.), *Advances in sport psychology* (2<sup>nd</sup> ed., pp. 501-527). Champaign, IL: Human Kinetics.

- Kimiecik, J. C., & Stein, G. L. (1992). Examining flow experiences in sport contexts: Contextual issues and methodological concerns. *Journal of Applied Sport Psychology, 4*, 144-160.
- Landsberger, L.M., & Beauchamp, P.H. (1999). Indicators of performance momentum in competitive golf: An exploratory study. In M.R. Farrally & A.J. Cochran (Eds.), *Science and golf III: Proceedings of the 1998 World Scientific Congress of Golf* (pp. 353-361). Champaign, IL: Human Kinetics.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park: Sage.
- Nideffer, R.M. (1994). *Psyched to win*. Champaign, IL: Leisure Press.
- Nideffer, R.M., & Sagal, M-S. (2006). Concentration and attention control training. In J. Williams (Ed.), *Applied Psychology: Personal growth to peak performance* (5th ed., pp. 382–403). New York: McGraw-Hill.
- Orlick, T. (2007). *In pursuit of excellence* (4<sup>th</sup> ed.). Champaign, IL: Human Kinetics.
- Patton, M. (2002). *Qualitative research and evaluation methods*. Newbury Park: Sage.
- Russell, W.D. (2001). An examination of flow state occurrences in college athletes. *Journal of Sport Behaviour, 24*, 83-107.
- Silverman, D. (2001). *Interpreting qualitative data: Methods for analysing text, talk and interaction*, (2<sup>nd</sup> Ed.). London: Sage.
- Singer, R.N. (2002). Preperformance state, routines and automaticity: What does it take to realise expertise in self-paced events? *Journal of Sport & Exercise Psychology, 24*, 359-375.
- Smith, M.F. (2010). The role of physiology in the development of golf performance. *Sports Medicine, 40*, 635-652.

- Stavrou, N.A., Jackson, S.A., Zervas, Y., & Karteroliotis, K. (2007). Flow experience and athletes' performance with reference to the orthogonal model of flow. *The Sport Psychologist*, *21*, 438-457.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research*. London: Sage.
- Sugiyama, T., & Inomata, K. (2005). Qualitative examination of flow experience among top Japanese athletes. *Perceptual and Motor Skills*, *100*, 969-982.
- The European Tour*. (n.d.). Retrieved May 17, 2011 from The PGA European Tour website, <http://www.europeantour.com>
- Young, J. A. (2000). Professional tennis players in the zone. In S. J. Haake & A. Coe (Eds.), *Tennis Science and Technology* (pp. 417-422). Malden, MA: Blackwell Science.