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Flow: Individual v. Team Sport

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April 2016

To the Dean of the Graduate School:

We are submitting a thesis written by Andy Worthington entitled FLOW: INDIVIDUAL V. TEAM SPORT.

We recommend acceptance in partial fulfillment of the requirements for the degree of Master of Science in Sport and Fitness Administration through the Richard W. Riley College of Education.

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FLOW: INDIVIDUAL V. TEAM SPORT

A Thesis

Presented to the Faculty
of the
Richard W. Riley College of Education
in Partial Fulfillment
of the
Requirements for the Degree
of
Master of Science
in Sport and Fitness Administration
Winthrop University

May, 2016

By

Andy Worthington

Abstract

Flow is a psychological state that is often described as everything coming together or an effortless performance. A variety of studies have examined the flow state to better understand how to measure flow, to gauge athlete's experiences with flow, and even to gauge new methods to promote flow. However, few studies look at flow within sport-specific setting. The purpose of this study was to investigate whether differences exist between the flow experiences of team athletes and the flow experiences of individual athletes. Sixty-four NCAA Division I athletes participated in the study. All athletes completed the Flow State Scale, as well as six open-ended follow-up questions about their flow experience. An independent t-test was calculated to compare total flow within team athletes and total flow within individual athletes. Mean flow scores for team and individual were not significantly different ($p = .422$). Results of this study are beneficial for sport psychologists and other researchers to better understand the flow state and how it is experienced within specific sport settings.

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Chapter 1

Introduction

Flow is defined as a state of concentration so focused that it amounts to absolute absorption in an activity. Investigations by Csikzentmihalyi (1990) show that flow makes an experience genuinely satisfying, that optimal experience does not come in relaxing moments of life, but instead occurs when the mind and body are stretched to their limits. This experience depends on the ability to control each situation moment by moment, so everyone has to achieve it on their own levels and abilities. Some feelings felt during flow consist of: feeling strong, attentive, in effortless control, unselfconscious, and at the highest peak of performance (Csikzentmihalyi, 1990). Besides these feelings, there are also nine different prerequisites for flow to occur: challenge-skills balance, clear goals inherent in the activity, unambiguous feedback, concentration on the task at hand, action-awareness merging, loss of self-consciousness, a sense of control over the performance or outcome of the activity, transformation of time, and autotelic experience (an experience that is both enjoyable and intrinsically rewarding) (Swann, Keegan, Piggott, & Crust, 2012). The combination of these elements results in a deep enjoyment that is worth giving a lot of energy to feel the reward of it (Csikzentmihalyi, 1990).

Before continuing, it is necessary to further explain the dynamics of flow and clarify the difference between the state of flow and peak performance. Many believe that experiencing flow means that peak performance was reached, but this is not always the case. However, if one experiences peak performance, they more than likely were in a state of flow (Nektarios, Jackson, Zervas, & Konstantinos, 2007). Peak performance is described as an optimal performance, whereas flow is an intrinsically rewarding feeling.

Previous studies on flow in a number of settings have included recreational athletes, elite athletes, and even college athletes. Nevertheless, there is little research done within a team setting concerning flow. Thus, the purpose of this study was to analyze the differences in the experience with flow between athletes that participate in individual sports verses team sports.

Statement of the Problem

For this study, the independent variable was the type of sport, individual or team. The dependent variable was the experience of flow. Flow is what was examined within the different types of athletes used within the study.

Research Hypothesis

Does the type of sport in which an athlete participates affect their experience with flow, especially as it relates to individual sport vs. team sport? It is predicted that athletes that participate in an individual sport would experience flow more often. This is expected because in a team setting players that perform poorly in a game could limit another player from getting into a flow state. Individual athletes would not have that concern, since in most individual sports, teammates are not affected by others' performances.

Limitations

This study relied on a self-report questionnaire, which is a limitation. The results of a questionnaire are limited by the truthfulness of those responding to the questionnaire. Another limitation for this study is a small sample size. A major limitation of this study is that it was not be possible to study athletes during a flow experience. Thus, all of the

data collected was a reflection of a previous experience of flow, which may or may not have been recalled accurately on the part of the athlete.

Delimitations

One delimitation of the study was the use of Division I athletes. The experience of a flow state of college athletes is probably less than professional/Olympic athletes, but probably more than high school or recreational athletes. Flow is experienced based off of skill level so the higher capabilities, the greater the experience.

Definition of Terms

Division I Athlete. Operationally defined as any individual that participates on an officially recognized interscholastic varsity sport for one full season.

Flow. Defined as a state in which one is so engulfed in an activity that there is a loss of reality and one is completely concentrated on the task at hand (Csikzentmihalyi, 1990).

The Flow State Scale. A 36-item self-report scale developed by Jackson and Marsh (1996) and was created to find the extent of flow characteristics experienced during activities. The responses are set on a 5-point Likert-type scale where 1 is strongly disagree and 5 is strongly agree. Furthermore, the scale assesses the nine dimensions of flow by looking into each dimension for a total of four questions each (Nektarios, Jackson, Zervas, & Konstantinos, 2007).

Chapter 2

Review of Literature

The concept of flow is described throughout psychology and sport settings as an experience unlike any other. Flow is an experience in which everything just “clicks” and one becomes totally absorbed in the physical activity or sport in which he/she is participating. When this state occurs, an athlete will more than likely have an above average performance in that activity, and is also likely to experience one or several flow characteristics or dimensions (Jackson, Ford, Kimiecik, & Marsh, 1998). These dimensions of flow originated from Csikzentmihalyi (1990) and include a challenge-skill balance, merging of action and awareness, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, time transformation, and an autotelic experience. The following studies relate to this concept of flow, but break down into three groups: measurements of flow, examining flow in athletes, and promotion of flow in athletes. The measurements of flow include several studies conducted on the different ways flow can be measured and the effectiveness of each method. The second section of studies simply examine a number of athletes in a variety of settings and how they experience flow along with a controllable state variable. Finally, the last section deals with the promotion of flow in athletes. More specifically, these studies implement an intervention in order to produce an enhanced flow state in athletes.

Measurements of Flow

Jackson and Marsh (1996) developed and validated a scale that measured flow. A flow construct was developed from the nine dimensions of flow: challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. Certain items were established to reflect each dimension and a number of tests were completed to see that the most essential items were placed on the construct of flow. Previous studies were used, as well as the pilot study of 252 active participants. Participants in the Jackson and Marsh (1996) study include a total of 394 athletes across a wide range of sports. The results found that the hypothesized factor structure seem to be reliable. Furthermore, the model hypothesizing nine FSS factors was supported, and there was support for a hierarchical model (Jackson & Marsh). The conclusion of the study contains suggestions for future research and different ways to use the scale.

Nektarios, Jackson, Zervas, and Konstantinos (2007) had two intended purposes: to record the changes in Flow State Scale (FSS) subscales between the four observed states of the orthogonal model (apathy, anxiety, relaxation, and flow), and examine the relationship between challenge, skills, and flow, and the connection between flow experiences and performance. Two hundred twenty athletes participated in the study and each was active in an individual sport, had participated in at least 10 competitions, and had two years of competitive experience. Scales were administered before and after competition to measure the challenge of the competition and the perceived skill levels. Once the competition was over, the FSS was administered to evaluate whether a flow

experience had occurred. Furthermore, subjective and objective measures were evaluated based on the athlete's performances. Those that were in the flow and relaxation states demonstrated the highest scores, an indication they were in an optimal state. However, the athletes that experienced the apathy state scored poorly, an indication that they were not in an optimal state. The correlations indicate a positive relationship between the flow state and greater performance levels, which suggest that positive emotional states are related to an increased performance. Conversely, there were little to no correlations between the reported challenge of the game and athlete's performance, but skills of the athlete were somewhat correlated with flow (Nektarios et al., 2007). The results of the study could be used by coaches or sports psychology consultants in creating programs that will help facilitate the experience of flow.

Young and Pain (1999) examined a number of theoretical frameworks and other studies done on the idea of "flow." Furthermore, the study examined whether the phenomenon of flow is universal across sports and the heightened states of consciousness during participation. No new participants were included in this study because it was just based off comparisons of previous research. The authors describe key explanations of the flow state that come from two different theories: flow theory and reversal theory. The authors compared the dimensions of flow recognized by elite athletes from a plethora of sports the experience with those dimensions recognized by tennis players. Then, a quantitative analysis was done through the Experience Questionnaire which examined the notion of universality of flow in sport experiences. The findings suggest that the flow state is indeed something experienced across sports. There were no differences between

tennis players and elite athletes which further supports the idea that flow can be experienced in a variety of sports and skill levels.

Stavrou and Zervas (2004) analyzed the psychometric aspects of the FSS in sports using confirmatory factor analysis. There were a number of studies done to analyze the 36 item instrument that has been used to measure flow. A total of 1083 athletes took part in the study and they collectively participated in ten individual sports. Throughout the study, the scale was translated into Greek, its content was tested and analyzed, its factorial validity was examined by confirmatory factor analysis, and other alternative measurement models were tested. The findings indicate that the FSS has its items classified correctly, that the factor model used is acceptable, and found another model that is acceptable. Overall, this study illustrated that the nine first-order factors of the FSS are multidimensional and an effective tool in measuring flow (Stavrou & Zervas, 2004).

Examining Flow in Athletes

Russell (2001) examined whether differences existed between genders or sport setting in relation to certain factors pertaining to flow. Furthermore, the study examined the influences that were key to helping, preventing, and disrupting flow. Forty-two college-aged athletes participated in the study and they varied across a number of different individual and team sports. The 36-item FSS was administered to each athlete after their qualitative interviews. An interview was also developed to look further into the factors linked with flow state. In this interview, athletes were asked a variety of questions from describing a performance where they experienced flow to what kind of things helped to influence or prevent flow. The results of this study found that gender and sport

setting do not make a difference in the college athlete experiences of flow. The qualitative analysis examined factors that were relevant to both helping, preventing, and disrupting flow. The study found experience to be a factor in facilitating flow, and reported that 64% of the participants perceived flow to be a controllable state.

Swann, Keegan, Piggott, and Crust (2012) performed a systematic review on previous literature related to flow. More specifically, they analyzed how flow is experienced, how the flow state begins, and how controllable flow actually is. A search strategy was developed and there was a number of inclusion and exclusion criteria to the literature that could be used. After this process, a total of 17 studies met the criteria. Through all the studies, a total of 1194 athletes were assessed. Through the process, a ranking of the dimensions of flow most experienced were recognized. Concentration on the task at hand and action-awareness merging were two of the most prevalent. Another key finding across the studies was that 66% of athletes perceive flow to be something they can control. With a review of such a variety of literature, it was seen that most athletes experience the nine dimensions of flow in varying frequency (Swann, et al., 2012). The concept of flow has long been something perceived as elusive and most research shows that athletes do not experience flow very often. Despite this perception, this study shows that most athletes believe flow is indeed something they can control. The conclusion urges future studies to look into the explanation of flow, rather than just a describing the frequencies. Essentially, there is the possibility of learning to enhance how often flow occurs and potentially improving performance.

Bakker, Oerlemans, Demerouti, Slot, and Ali (2011) examined the relationship between environmental resources, flow, and performance among young talented soccer players. Before the study, there four different theories were formed:

1. Flow experienced at an individual level is greater when the result of the game on a team is a draw than when the result is a loss or win,
2. Soccer players' environmental resources and feedback from their performance have a positive connection with their experiencing flow,
3. Flow is positively correlated with self-ratings of performance and coach-ratings of performance,
4. Environmental resources have a great but indirect affect with self- and coach-ratings of performance according with flow.

A total of 15 Dutch professional soccer clubs participated in the study. This included 398 male soccer players. The coaches administered the questionnaire, completed player assessments, and recorded the score of each match. Three short scales were completed by the players, each dealing with one of three topics: autonomy, social support from coach, and performance feedback. The match result was also kept within the study. The results found partial confirmation on the idea that flow would be more likely experienced in a draw. Furthermore, it was found that both social support from a coach and performance feedback have positive correlations with the participants experiencing flow. However, autonomy showed no correlations with the experience of flow. The key findings were that social support and feedback from a coach about performance can be important enablers of flow.

Schuler and Brunner in 2009 investigated runners' experiences of flow in a marathon race. Three different measurements were taken during the course of data collection. First, participants completed a questionnaire before a race on their intended performance in that race. Secondly, the participants completed a questionnaire after completing the marathon, and thirdly, the participants were asked to remember the race as vividly as possible. It was hypothesized that the experience of flow would lead to a motivation to run again in the future, but that it would not have a direct effect on performance. A total number of 288 marathon runners participated in the study. The flow experience was measured either retrospectively or simultaneously, while after the race the performance and future motivation were measured. Furthermore, both pre-race training behavior and flow experience in training were measured. The results support the hypothesis that flow during performance led to a high future running motivation. Also, none of the studies showed a correlation between flow and actual performance in the race. Pre-race training did show to be a strong predictor in actual performance and experiencing flow during training, which heightened the training behavior and resulted in high race performance (Schuler & Brunner, 2009).

Privette and Bundrick (1997) compared psychological processes of peak, average, and failing performance in sport with some other activities. Specifically, the study examined people who would not be identified as elite athletes. One-hundred twenty-three adults participated in the study and a variety of activities were examined: arts, business, military, social service, and sport. The Experience Questionnaire was used to help examine the participant's first-person accounts of peak performance. There were a

number of different performances stated within the study; 20 peak performances, 38 average performances, and 18 failing performances. Peak performance was characterized by things such as fulfillment, play, and focus; while average performance was categorized by play, sociability, lack of significance and focus. Furthermore, failing performances were described as having a lack of fulfillment, a lack of focus, and little sociability. These results showed the impact that psychological processes have in sport. Also, characteristics of flow were illustrated in the process of peak performance in settings other than just sport (Privette & Bunderick, 1997).

Chavez (2008) examined the many factors that affect flow in college athletes including: those perceived to be most important in reaching flow, those seen to prevent or disrupt flow, and those that can help get one back into flow. Furthermore, the study examined the athlete's perceived controllability of the flow state and whether there was a correlation between body sensations and flow during performance. Sixteen Division I athletes participated in the study and they each represented either a team or an individual sport. Each participant took part in two interviews that were structured to gain the athletes take on flow. The findings found that positive thinking, mental preparation, and task orientation were critical elements in facilitating flow. Ten of the 16 athletes recognized that negative thoughts were a key element in preventing flow from occurring. Individual athlete's reported the controllability of flow at a 71% likelihood, while team sport athlete's reported it to be 67%. That is a relative small difference considering the different factors in participating each sport. Finally, the study did show that athletes

experience some form of body sensation throughout the experience of flow (Chavez, 2008).

Jackson (1996) observed how the flow state actually takes place in elite level athletes. The study measured the athlete's perspective on flow and how it was experienced. Furthermore, Jackson specifically examined the theoretical descriptions of Csikzentmihalyi (1990) to compare the athlete's descriptions. A total of 28 elite athletes participated from seven different sports. Elite was defined as one participating at the international level. Almost all of the responses from athletes could be classified into one of the dimensions of flow developed by Csikzentmihalyi (1990). However, there were some components of flow that did not receive a very strong support from the athletes. This further supports the idea that flow is experienced on such an individual or sport specific basis, and that differences are inevitable and expected (Jackson, 1996).

Cosma (1999) examined flow state within a team. It was hypothesized that flow would take place in team settings, that flow would occur in similar dimensions within the construct of a team, and that the more playing time an athlete received the more likely they were to achieve flow. A total of 104 male athletes took part in the study and each played collegiate soccer at some level. The athletes were asked to complete two different Flow State Scales; one was the original and the other was one that had been revised for the team setting. The results support the hypothesis that flow does occur within a team setting; however, the dimensions within a team setting fell into more of the four factor model of flow and not the original nine dimensions by Csikzentmihalyi (1990). The factors that were more prevalent within the team setting include: an autotelic experience,

clear goals, control, and concentration on the task at hand. The results also found that playing time did factor into one's ability to reach the flow state, in that the more playing time received resulted in a higher likelihood of experiencing flow. This is understandable, as an athlete would need to play, and likely play a significant amount, to get into the flow state (Cosma, 1999).

Promotion of Flow in Athletes

Kowal and Fortier (1999) investigated the relationship between situational determinants of motivation. Also, the authors wanted to assess the relationship between the perceptions of controllability and likelihood of the experience of flow. It was hypothesized that intrinsic and self-determined forms of motivation would have a positive association to flow, while amotivation (a state of lacking any motivation to engage in an activity) and non-self-determined motivation would be negatively related. Two-hundred three master-level swimmers participated in the study. Immediately following a swim practice, each participant took part in a 15 minute questionnaire. The questionnaire was modified for swimmer terminology and measured situational motivational determinants, situational motivation, and flow. The results of the study found that swimmers who swam for the pleasure and satisfaction associated with swimming, or participated to benefit themselves were the ones most likely to experience flow. On the other hand, the swimmers who were motivated by external pressures or not motivated intrinsically were much less likely to experience flow.

Kaufman, Glass, and Arnkoff (2009) examined a mental training approach and how it could affect flow states. The program is known as Mindful Sport Performance

Enhancement and through the study the psychological factors that influence flow were analyzed. A total of 32 recreational athletes participated in the current study, 11 were archers and 21 were golfers. Over half of the participants indicated that they had some type of exposure to sport psychology in the past. The Mindful Sport Performance Enhancement was made into a 4-week program with longer sessions for the purpose of this study and to not constrict participants from the business of their lives. The mindfulness training includes a variety of things from a body can, meditation, yoga, and breathing exercises. The findings show that the Mindful Sport Performance Enhancement program can in fact enhance flow, mindfulness, and some aspects of sport confidence (Kaufman et al., 2009). This evidence is important because the state of flow can lead to peak performance, so enhancing the likelihood of flow in athletes is appealing to both athletes and coaches.

In 1998, Jackson, Ford, Kimiecik, and Marsh examined the likely psychological correlates of flow in a number of older athletes. Among the things examined were state and trait, and dispositional flow states. There was a total of 398 athletes that took part in the study, all of which were part in a World Masters Games. The majority of participants participated in one of these four sports: swimming, triathlon, cycling, or track and field. Each participant was asked to complete a questionnaire in which they were asked questions dealing with a variety of topics including intrinsic motivation, goal orientation, perceived sport ability, competitive trait anxiety, and the experience of flow when participating in a sport. The form was to be filled out as soon as practically possible after completing an event in the Games. Only 213 of the participants completed the event-

specific portion of the questionnaire. The results of the study found that a high perception of sport ability tends to be a key factor in an athlete's experience of flow. Also, there was a link between low perceived ability and high anxiety. This is important because there was a clear negative relationship between anxiety and one achieving flow (Jackson et al., 1998). Finally, intrinsic motivation was found to have a strong correlation with the experience stimulation factor, which shows that athletes are likely to engage in an activity if feelings of excitement are stimulated or associated with the movement or activity itself.

Koehn, Morris, and Watt (2014) observed how effective an imagery intervention program could be in facilitating a state of flow in young athletes. The participants for this study included four male tennis players from ages 13 to 15. Each competed in at least six tournaments per year. The imagery script was tailored for this specific study to only focus on specific flow dimensions. It was predicted that the use of imagery would indeed facilitate the participant's ability to achieve the flow state and thus would produce better competition performance. The imagery script was given to the participants and it was explained to each how to use the script effectively on their own. Each participant was given the same instructions and a practice session was conducted to help the participants. Before this study, none of the participants had any experience with the use of imagery. Over the course of the study, three of the participants demonstrated a mean increase in flow, and all had improved their mean performance from baseline to post-intervention phase. Furthermore, it was found that using both cognitive and motivation types of imagery are quite effective in increasing the state of flow. Results indicate that the

imagery script was an essential part to the participants' off-court training program and competition preparation.

Jackson (1995) further examined the factors that influence the flow state in elite athletes. This study wanted to move past describing the experience of flow and instead look into understanding the factors that facilitate an athlete's flow state. Twenty-eight elite level athletes participated in the study. Eleven athletes participated in a team sport, while the other 17 participated in individual sports. An interview was developed for this study and it included a number of questions covering the aspects of a flow experience. The data from the interviews included 361 themes that were then synthesized to 10 dimensions believed to illustrate whether an athlete can achieve flow or not (Jackson, 1995). These 10 dimensions were: motivation to perform, achieving optimal arousal level before performing, precompetitive and competitive plans and preparation, optimal physical preparation, readiness, and state, optimal environmental and situational conditions and influences, how performance feels and progresses, focus, confidence and mental attitude, team play and interaction, and experience factor. The study also found that athletes do perceive the flow state to be something they can control, and factors seen to facilitate or prevent flow were seen as controllable. However, the factors that disrupt flow were seen as uncontrollable by most of the athletes.

In 2001, Jackson, Thomas, Marsh, and Smethurst investigated which psychological factors have some kind of relevance to an athlete achieving flow. Furthermore, the authors determined factors related to flow that would make it more accessible to both the athletes and the researchers. A total number of 236 athletes from

across three sports participated in the study. The participants completed a dispositional assessment of athletic self-concept, psychological skills, and flow and also completed a post-event flow assessment. The findings show a positive correlation between psychological skills and the flow state being achieved. Four particular dimensions were most prevalent in predicting the performance measures: challenge-skill balance, autotelic experience, clear goals, and action-awareness merging (Jackson, et al., 2001).

In 2013, Crust and Swann analyzed the relationship between mental toughness and dispositional flow. It was hypothesized that there would be a strong correlation between the two due to the connection with confidence and competitive nature that comes with mental toughness. The study consisted of 135 athletes that participated in either club or University sports. Most of the participants were from team sports and there were a total of 12 sports represented. The participants completed two different questionnaires, one that pertained to mental toughness and one that pertained to flow. The results of the study indeed back up the hypothesis that there was a relationship between mental toughness and dispositional flow. The strongest correlations were found between the mental toughness measurements of confidence, while there was a high correlation between sense of control and challenge-skill balance within flow.

Cathcart, McGregor, and Groundwater (2014) examined relationships between aspects of mindfulness and aspects of flow within athletes at an elite level. More specifically, they wanted to measure the validity of the mindfulness construct (Baer et al., 2006) and extend prior research showing that mindfulness and flow are related. Ninety-two athletes took part in the study and they participated in a large variety of sports. The

participants were asked to complete two questionnaires: the Five Facet Mindfulness Questionnaire and the Dispositional Flow Scale-2. The results of the study do support the use of the five-facet mindfulness construct as psychometric analysis reinforced the validity. One key finding was that athletes that participated in individual sports showed higher correlations between mindfulness and flow.

Summary & Conclusions

These studies examined a number of instruments and different ways of measuring flow. In Jackson and Marsh's (1996) study the Flow State Scale was developed with inclusion of Csikzentmihalyi (1990) nine dimensions of flow. The Flow State Scale was evaluated in a number of ways and was found to be an effective measurement of flow throughout the studies. The studies contained a variety of participants as some were college athletes, elite athletes, professional athletes, runners, and others. Key findings from Russell (2001) set up a base for the current study as it found that the state of flow was experienced differently among individual and team athletes. Furthermore, Cosma (1999) found that athletes in teams experienced specific dimensions of flow more so than other dimensions. Finally, some approaches to promote flow were looked at in the Mindful Sport Performance Enhancement approach, imagery, and motivational factors. More specifically, Kauffman (2009) found that the Mindful Sport Performance Enhancement Program can in fact enhance flow, mindfulness, and some aspects of sport confidence. The findings consistently point to the idea that the flow state is controllable as seen in the study done by Jackson (1995) in which 79% of athletes reported the state of flow to be controllable. In conclusion, there is minimal research completed in which the

differences of the flow state are examined between individual athletes and team athletes are analyzed.

Chapter 3

Methods and Procedures

The purposes of the current study was to examine the differences in the flow experienced between athletes participating in individual sports and team sports. Furthermore, the study examined if and how individual or team sport might facilitate the flow experience. Csikzentmihalyi (1990) identified nine dimensions of flow, and this study attempted to identify which of these factors were more prevalent in individual sport versus those more prevalent in team sport. Does the sport an athlete participates in affect their experience with flow? In particular, the study analyzed the differences experienced within flow between individual sports and team sport.

Participants

A sample of 64 athletes (42% male, 58% female) chose to participate in this study. They represented eight different sports, four of which were individual sports (cross country, golf, tennis, and track and field) and four of which were team sports (baseball, basketball, soccer, and volleyball). Ages ranged from 18 to 23 years, and all were members of a Division I varsity athletic team. A total of 37 females participated in the study, while just 27 men participated. The participants represented a university in the Southeastern part of the United States.

Research Design

This study was non-experimental descriptive research. The study examined how flow is different in different in individual or team sports. The independent variable was

the type of sport (individual or team) and the dependent variable was the athlete's experience of flow.

Instrumentation

Flow was measured using the FSS a 36 question survey that asks athletes to recall an experience of flow and answer questions based off that experience (Jackson & Marsh, 1996). The FSS was developed by Jackson and Marsh in 1996 (Appendix E). The FSS contains nine dimensions which were formed in original research by Csikzentmihalyi (1990). The flow dimensions (subscales) include: (1) challenge-skills, (2) action-awareness, (3) clear goals, (4) unambiguous feedback, (5) concentration, (6) sense of control, (7) loss of self-consciousness, (8) transformation of time, (9) autotelic experience. Responses for each item ranged from strongly disagree (1) to strongly agree (5). Examples of the FSS include: "I felt in total control of what I was doing" or "I really enjoyed the experience." Responses were summed for scores within each subscale and then all subscales were summed for a total FSS score. Subscale scores ranged from 4 to 20 and total FSS scores ranged from 36 to 180, with higher scores representing higher experience of flow within both the subscale and the total scores. The inter-item reliability of the total FSS scale was strong ($\alpha = .83$), and so were each of the nine subscales ($\alpha > .80$). Furthermore, the construct validity of the Flow State Scale varies from .177 to .724 (median $r = .50$) thus giving the scale support (Cosma, 1999).

Additionally, there were six follow-up, open-ended questions to help further explain the flow state. The first question simply asked if flow had ever been experienced. If "no" was the answer the participants were asked why they felt they had never

experienced flow. If “yes” was the answer, participants were directed to five additional questions, for example: “Do you feel like you can control getting into ‘flow’ (being in the zone or an effortless performance)? Yes or no? Please explain which factors you view as controllable and uncontrollable.” The responses for these questions were open-ended, and the athletes were not limited in the length of their responses.

Procedures

Before initiating the study, the university’s Institutional Review Board (IRB) approved the study’s procedures (Appendix D). At the beginning of the year, two explanation letters were sent to the athletic director of the university and the coaches of each team to explain the purpose of the study (Appendix A and B). Upon approval by the athletic director and the coaches, the researcher provided the coaches a link to the online survey; the coaches then distributed the survey to their respective athletes. The athletes were instructed on survey directions via the online service of Qualtrics. A written statement was included at the beginning of the survey to gain consent from those who chose to participate (Appendix C). All data was secured by the researcher, and encrypted passwords were used to insure the privacy of all participants. Additionally, all surveys were anonymous.

Statistical Analysis

Quantitative Analysis – Flow State Scale. A number of independent t-tests were conducted to examine if any differences could be found between the following groups:

individual sports v. team sports, males v. females, under classman v. upper classman, and white athletes v. non-white athletes.

Additionally, differences between team and individual within the subscale scores were analyzed using ANOVA to test the research hypothesis.

Qualitative Analysis – Atlas.TI (Scientific Software Development, 2011). This software was used to assist with the organizing and categorizing of the open-ended questions answered by the participants. As prescribed by Merriam (2014), a three step process of coding was used to help analyze the data. First, open coding assisted in categorizing the primary themes. Then, axial coding cross-referenced each primary theme. Finally, selective coding provided further data that reflects the meaning of each category for all the themes.

Chapter 4

Manuscript

Introduction

A preeminent researcher of flow, Csikzentmihalyi (1990), has described flow as a state in which people are so immersed in an activity that nothing else matters. Often flow may be described as “being in the zone.” Athletes often desire to experience the state of flow, and although it is found to occur most frequently in elite athletes, flow can occur across all levels of skill. Jackson and Marsh (1996) further describe the flow state as a situation where personal skills equal or exceed the required challenges. This experience is enjoyable, free from distractions, and typically leads to an overall good performance. Thus, there has been research on what psychological factors enhance, inhibit, and disrupt flow. According to Bakker, Oerlemans, Demerouti, Bruins Slot, and Karamat Ali (2011) most studies of flow in sport have focused on individual sports.

Csikzentmihalyi (1990) created nine dimensions that are precursors of flow; these nine dimensions have been separated into two categories: flow conditions and flow characteristics. Flow conditions must take place in order for flow to be experienced and include: clear goals (i.e., task that is directly related with the activity for the individual to go after); challenge-skills balance (i.e., an individual’s skill is met with an equal challenge for them, but they are able to meet the challenge by excelling outside their typical abilities would allow them); and unambiguous feedback which gives instruction to the athlete as to how to alter their performance or informs the athlete that they indeed are on their way to achieving their goals (Swann, Keegan, Piggott, & Crust, 2012). Conversely, flow characteristics give insight into what an individual experiences during

flow, including: loss of self-consciousness (i.e., reduced alertness of one self and what is going on around them); transformation of time, in which time can seemingly speed up or slow down; concentration on the task at hand (i.e., a focus that is completely engulfing and all thoughts are on the current activity); action-awareness merging which is total immersion of oneself in the activity; and a sense of control over all that occurs while performing, including the outcome (Swann et al., 2012). Lastly, Csikzentmihalyi (1990) developed a ninth dimension, autotelic experience, which is a combination of them all. Autotelic experience describes the entirety of the flow experience as being both enjoyable and intrinsically rewarding (Swann et al., 2012).

Flow is a phenomena that most athletes strive to experience, but it is an experience that is rare or difficult to achieve on a consistent basis. Jackson (1996) described flow as an “elusive concept that is difficult to define precisely or describe in its fullness.” Despite this elusiveness, many athletes perceive flow to be a controllable state. Within a study of elite athletes (both individual and team), by Jackson (1995), reported that 79% of these athletes felt that achieving flow was controllable. Similarly, Russell (2001) found that 64% of college athletes felt flow was a controllable state. Still the experience of flow does not happen all of the time.

Some researchers have examined ways to facilitate the flow experience. Koehn, Morris, and Watt (2014) developed an imagery intervention program to attempt facilitating flow in junior tennis athletes. The results indicated that imagery intervention proved valuable, specifically in their off-court training routine and competition preparation. Also, each participants’ mean performance improved throughout. This

supports other research of psychological tools enhancing the likelihood of flow and better overall performances (Koehn et al. 2014).

One concept that is often misunderstood is the difference between flow and peak performance. Quite often, these two terms are used synonymously. There is in fact a close relationship between flow and peak performance, however, they are entirely different and should not be used interchangeably. Stavrou, Jackson, Zervas, and Karteroliotis (2007) say that the two cannot be used interchangeably, since someone could be in flow and not actually experience peak performance. However, if one achieves a peak performance, it is likely they were in the flow state. Flow in and of itself is an intrinsically rewarding experience, whereas peak performance is seen as one performing at an optimal level (Stavrou et al. 2007). Jackson (1996) describes peak performance as a “standard of accomplishment rather than a psychological state”. Flow is often found to be a precursor for peak performance but peak performance is not a requirement for flow.

Finally, there have been many studies done on flow. Specifically, previous research almost always athletes vary across competition levels and gender. Studies done have contained both individual and team sport athletes, though team sport athletes are more rare. However, very few studies compare the differences between athletes participating in individual sports and those participating in team sports (Chavez, 2008; Russell, 2001). In fact, most studies focus on individual sports as it is thought to be more likely to elicit flow (Bakker et al. 2011). There is evidence that flow does occur in the team sport setting (Jackson, 1995). One study in particular (Russell, 2001) looked at aspects facilitating, preventing, and disrupting flow. This study found empirical evidence

of flow across both team and individual settings. To date, there is little research comparing the experience of flow between individual sport athletes and team sport athletes. Thus, the purpose of this study was to analyze the differences in the experience with flow between athlete's participating in individual sports and those participating in team sports.

Methods

Participants. A total of 75 participants began the survey, however only 64 completed the survey. Participants included 27 males (42%) and 37 females (58%). Ages ranged from 18 to 23 years of age, with the mean age of $M = 19.5$, $SD = 1.27$. The majority of participants were either 18 years of age ($n = 17$) or 19 years of age ($n = 17$). Most participants were either freshman ($n = 22$) or juniors ($n = 20$). The majority of those completing the survey were Caucasian ($n = 40$), while African American second most ($n = 12$). Team sport athletes ($n = 38$) were represented by basketball, baseball, soccer, and volleyball. Individual sport athletes ($n = 26$) were represented by cross country, golf, tennis, and track and field. Baseball had the highest number of participants ($n = 14$) while three other sports had ten participants: soccer, tennis, and track and field. Other sports included basketball, cross country, golf, volleyball, and both cross country and track and field ($n = 20$). Sample characteristics can be found in Table 1.

Instrumentation. Flow was measured using the Flow State Scale (FSS), which was created by Jackson and Marsh (1996), a 36 question survey that asks athletes to recall an experience of flow and answer questions based off that experience. The FSS contains nine dimensions which were formed in original research of Csikzentmihalyi

(1990). The flow dimensions (subscales) include: (1) challenge-skills, (2) action-awareness, (3) clear goals, (4) unambiguous feedback, (5) concentration, (6) sense of control, (7) loss of self-consciousness, (8) transformation of time, (9) autotelic experience. Responses for each item ranged from strongly disagree (1) to strongly agree (5). Examples of the FSS include: “I felt in total control of what I was doing” or “I really enjoyed the experience.” Responses were summed for scores within each subscale and then all subscales were summed for a total FSS score. Subscale scores ranged from 4 to 20 and total FSS scores ranged from 36 to 180, with higher scores representing higher experience of flow within both the subscale and the total scores. The inter-item reliability of the total FSS scale was strong ($\alpha = .83$), and so were each of the nine subscales ($\alpha > .80$). Furthermore, the construct validity of the Flow State Scale varies from .177 to .724 (median $r = .50$) thus giving the scale the proper support (Cosma, 1999).

Additionally, there were six follow-up, open-ended questions to help further explain the flow state. The first question simply asked if flow had ever been experienced. If “no” was the answer the participants were asked why they felt they had never experienced flow. If “yes” was the answer, participants were directed to five additional questions, for example: “Do you feel like you can control getting into ‘flow’ (being in the zone or an effortless performance)? Yes or no? Please explain which factors you view as controllable and uncontrollable.”

Statistical Analysis. *Quantitative Analysis – Flow State Scale.* A number of independent t-tests were conducted to examine if any differences could be found between the following groups: individual sports and team sports, males and females, under

classman and upper classman, and white athletes and non-white athletes. Additionally, differences between team and individual within the subscale scores were analyzed using ANOVA to test the research hypothesis.

Qualitative Analysis – Atlas.ti (Scientific Software Development, 2011) software was used to assist with the organizing and categorizing of the open-ended questions answered by the participants. As prescribed by Merriam (2014), a three step process of coding was used to help analyze the data. First, open coding assisted in categorizing the primary themes. Then, axial coding cross-referenced each primary theme. Finally, selective coding assisted in further analyzing the final meaning of each category for each theme.

Results

Total flow state scores. Independent t-test were conducted to determine the differences between individual ($n = 26$) and team ($n = 38$). Mean flow scores for team and individual sport participants were not significantly different ($p = .422$). Additionally, mean flow scores for males were not significantly different from females ($p = .682$). No significant difference ($p = .482$) was found between under classman ($n = 35$) and upper classman ($n = 29$). Under classman were categorized as freshman and sophomore while upper classman were categorized as juniors and above. Similarly, mean flow scores for whites were not significantly different from non-whites ($p = .159$). FSS values can be found in Table 2.

Dimensions of Flow. Within the FSS, the nine dimensions or subscales of flow discovered by Csikzentmihalyi (1990) were analyzed. The nine dimensions include challenge-skills balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, loss of self-consciousness, a sense of control, transformation of time, and autotelic experience. Four questions were asked for each dimension and the results were analyzed for differences between individual and team athletes.

Challenge-Skills Balance. Within the subscale of challenge-skills balance, there was a significant difference between the level of flow experienced within team sport athletes and individual athletes ($p = .032$). These results show that team sport athletes reported the challenges of their sport being equal with their skills more so than individual athletes.

Action-Awareness Merging. There was a significant difference within the awareness subscale ($p = .000$). Team sport athletes showed a higher level of awareness, or total absorption in the activity, than did individual sport athletes.

Concentration on the Task at hand. Within the subscale of concentration on the task at hand, there was a significant difference ($p = .002$). Team sport athletes reported a higher level of concentration and the ability to completely focus without distractions than individual sport athletes.

Sense of Control. There was also significant difference within the sense of control subscale ($p = .021$). Team sport athletes perceived to have a control over the outcome of the activity more so than individual sport athletes.

Autotelic Experience. Within the subscale of autotelic experience, significance was found between individual sport and team sport athletes ($p = .029$). Team sport athletes reported having an enjoyable and intrinsically rewarding experience more so than individual sport athletes.

There was no significant differences found among the remaining four subscales of the Flow State Scale: clear goals, unambiguous feedback, loss of self-consciousness, and transformation of time. Team sport athletes did experience each of these, except loss of self-consciousness, more so than individual athletes, but none of the results were significant.

Qualitative Results. Fifty-one participants (80%) went on to complete the qualitative open-ended follow-up questions. Three participants noted that they had not experienced the flow state. Results can be found in Table 3.

Discussion

The purpose of this study was to examine if there was a difference in the experience of flow within athletes participating in individual sports and those participating in team sports by using the FSS (Jackson & Marsh, 1996). From the quantitative data, there was no significance found between team sport athletes and individual athletes across total flow. However, among five of the nine dimensions of flow

there was a significant difference in team sport athletes reporting experiencing flow at a higher level than individual sport athletes. The quantitative results did support the construct of flow for athletes across all sport settings. The nonsignificant independent t-test results for team sports and individual sports indicate that the college athletes experience flow factors similarly, regardless of individual or team sport participation. In 2001, Russell studied college athletes and compared results from the FSS among gender and sport setting and there was no significance. This study also found no significant differences in flow between genders, and furthermore, no significant differences were found between upper and underclassmen. This study supports those findings in that flow is experienced similarly across a variety of settings.

The quantitative results did find significance among five of the nine flow dimensions created by Csikzentmihalyi (1990). In all cases of significance, team athletes experienced the flow factors of that dimension more so than individual athletes. Specifically, significant differences were found among challenge-skills balance, action-awareness merging, concentration on the task at hand, sense of control, and autotelic experience. In 1996, Jackson found that 80% of athletes reported experiencing the action-awareness merging, concentration on the task at hand, and the sense of control dimensions more so than the other six subscales. Jackson hypothesized that these three dimensions may be more central to elite athletes in flow. This study supports his theory with non-elite, college athletes, specifically those in team sports. On the contrary, Jackson also found that two dimensions, transformation of time and loss of self-consciousness, were not universally endorsed and the current study concurs with

Jackson's findings. The dimensions of transformation of time and loss of self-consciousness were not significant across team sports or individual sports. Two other dimensions were reported just over a third of the time in Jackson's study, challenge-skill balance and clear goals. However, the current study showed a significant level of the challenge-skill balance dimension within team athletes. Jackson's study involved elite athletes so it is likely that the college athletes in the current study are not at the skill level of the elite athletes studied by Jackson, thus causing the challenge-skill balance to be more significant for college athletes than elite athletes. It is important and more recognizable for a college athlete to realize that the challenge they face meets their current skill level, whereas the elite athlete is likely more focused on higher level of competition factors and may take for granted this concept.

In 1999, Cosma analyzed a soccer team and found four of the nine dimensions to be more prevalent than the other dimensions. It was expected to see this correlation carry over into this study. Two dimensions, concentration and autotelic experience were found to be significant in the current study. While clear goals and unambiguous feedback were not found to be significant in the current study. This is unusual because within a team setting, it would be expected that having clear goals and receiving feedback from teammates or coaches would facilitate flow and thus be reported as doing so. In the current study, this was not the case as neither dimension was significant.

There are some specific reasons it is expected that some of these dimensions from the FSS were experienced more so within the team sport setting rather than the individual sport setting. Within the challenge-skills balance dimension, it is believed that the

challenge itself is more recognizable as it is an opponent the team athlete must overcome. In an individual sport, the challenge is often is overcoming themselves so it may not be noticed as much that these challenges meet their skill level. The challenge itself is the key and in the team setting it is typically a tangible, noticeable obstacle, whereas in individual sport it just may not be noticed. This lack of recognizing the challenge leads to the lower scores in this dimension for individual athletes. Within the autotelic experience subscale, it is understandable that the team athletes scored significantly higher than individual athletes. It is expected that experiencing flow and the great feeling that comes with it, is more enjoyable when experienced with teammates. This is why team athletes showed a significantly higher score within the autotelic experience subscale when compared to individual athletes.

Within the sense of control dimension, the findings that team athletes experienced a sense of more control than individual athletes was rather surprising. It was expected that individual athletes would score higher in this dimension as they would have less outside factors than team athletes, like a teammate not passing them the ball or a bad set. This also was the expectation within the concentration on the task at hand subscale. That individual athletes would score higher due to less distractions and less external factors playing a part in the competition. However, in both subscales team sport athletes reported higher scores in these categories than did individual athletes.

Within the qualitative data, the key was to further examine the athletes experience with flow. The first question asked about the athlete's whether or not they thought they could control getting into flow. In the study by Russell (2001), 64% of athletes reported

flow as being a controllable state, which was significantly less than the study done by Jackson (1995) which reported 79% of athletes saying the flow state was controllable. In the current study, only 25% of the athletes perceived flow to be a controllable state. This is significantly lower than previous research. These findings do support the thinking that if flow was controllable as previously reported, why is the flow state so elusive? Further into the research, a question asks athletes to indicate whether or not their team won the game or in the case of an individual sport, the match or event. Just 46% of the athletes reported their team winning the game or in an individual sport the match or event. This is surprising as it would seem that a player performing at a high level would likely lead to a win in the game, match, or event. It was surprising this number was not higher across sport settings. Another question asked if flow resulted in the athlete's best overall performance or a personal record. Not surprisingly the results showed that 75% of athletes did in fact have their best overall performance or achieved a personal record when in the flow state. Again, with athletes reporting having their best overall performance it is surprising this performance did not lead to more winning outcomes for them. These findings help look into the perceived controllability of flow which has been previously studied and some new topics like how flow affects the outcome of the game or event that has not been previously researched.

Strengths & Limitations

The key strength to this study is that it is the first to exclusively look into the differences in the experiences of flow between team and individual athletes. Russell (2001) reported on the differences between sport settings, but it was not the primary

focus of the study. Another strength to this study in particular was its use of the FSS. This scale has been widely used in a number of previous studies. Furthermore, the inter-reliability of the scale is .83 and each subscale has a reliability of .80 or higher (Cosma, 1999). Another strength in this study, was the participation of college athletes from an NCAA Division I university. Former studies completed by Jackson and Marsh showed that elite athletes are particularly likely to experience flow. Though the college athletes studied would not be considered “elite”, other studies have found college athletes to be capable to experience flow at a high level due to the skill level required at this particular level (Russell, 2001; Chavez, 2008).

The limitations to the current study include self-report of the experience of flow and the unknown time since the flow state was experienced. The obvious limitation to this study and to any study involving “flow” was the inability to survey the athlete while they are actually experiencing the flow state. Directly after one experiences flow would be ideal, but with the illusiveness of the state it is nearly impossible to manage such a task. Regardless, having the athlete’s recall an experience of the flow state from memory is the result.

Future Research

With the results showing such significance within certain dimensions of flow compared to individual athletes, team flow is something that should be studied further. Team flow is the idea that certain players could get into flow and then act as a catalyst for the entire team to experience flow (Swann et. al, 2012). This could help explain exceptional team performances and would present an interesting area to study. The

comparison of individual and team athletes and analysis of how the dimensions differed among them is an area that warrants further investigation. Finally, a better understanding of how flow can affect the outcome of the game, match, or event should be considered in future research.

Furthermore, there is overwhelming evidence that athletes do believe that the flow state is controllable (Chavez, 2008); however, it tends to be a state that is a rarity among athletes. So the question is why is flow not experienced more often? However, any athlete who recalls their athletic career can only separate a few experiences they would designate as a flow state. Further research should look into discovering the factors that specifically facilitate flow.

Conclusion

In summary, the results showed that athletes from both individual and team sports experienced total flow similarly. However within five of the nine subscales of flow, team athletes did report a greater level of flow than did individual athletes. This study demonstrates that flow is experienced across all different sport settings. The athletes' descriptions of the flow state further support that college athletes can and do experience flow. Often described as "a high", "a feeling of being unstoppable", or "the feeling of nothing can go wrong," all which may be better descriptions than just the word "flow." From the results, it is clear that team athletes should be considered to experience flow similar to individual athletes.

Table 1.

Characteristics of Sample

Characteristics	n	%	M	SD
Gender				
Male	27	42.2		
Female	37	57.8		
Age	64		19.5	1.272
Year in school			2.25	1.084
Freshman	22	34.4		
Sophomore	13	20.3		
Junior	20	31.3		
Senior	9	14.1		
5 th year senior	0	0		
Race/Ethnicity				
White	40	62.5		
Black/African American	12	18.8		
Hispanic/Latino	3	4.7		
Asian/Pacific Islander	4	6.3		
Native American	0	0		
Other	5	7.8		
Sport				
Basketball	8	12.5		
Baseball	14	21.9		
Soccer	10	15.6		
Volleyball	6	9.4		
Tennis	10	15.6		
Track & Field	10	15.6		
Cross Country	1	1.6		
Golf	3	4.7		
Both Cross Country and Track & Field	2	3.1		

Note: n = number of participants; % = percent of participants; *M* = mean; *SD* = standard deviation

Table 2.

Sample values on total flow and subscales of flow for team and individual athletes.

Variable	N	Mean (SD)	Team Mean (SD)	Individual Mean (SD)	Range
Total Flow	64	149.65 (15.85)	153.71 (14.35)	143.73 (16.34)	118 – 180
Subscales of Flow					
Skills Meet Challenge	64	17.28 (1.95)	17.71 (1.92)	16.65 (1.85)	13 – 20
Awareness	64	17.06 (2.40)	17.92 (2.07)	15.81 (2.31)	12 – 20
Clear Goals	64	17.52 (2.20)	17.74 (2.33)	17.19 (2.0)	12 – 20
Unambiguous Feedback	64	16.28 (2.95)	16.73 (2.78)	15.62 (3.11)	8 – 20
Concentration	64	17.19 (2.66)	18.0 (2.23)	16.0 (2.82)	10 – 20
Sense of Control	64	16.41 (2.85)	17.08 (2.65)	15.42 (2.90)	8 – 20
Loss of Self- Consciousness	64	14.59 (3.29)	14.5 (3.64)	14.73 (2.75)	8 – 20
Transformation of Time	64	14.95 (3.29)	15.21 (3.20)	14.58 (3.44)	6 – 20
Autotelic Experience	64	18.38 (1.97)	18.82 (1.84)	17.73 (2.01)	13 – 20

Note: N = number of participants; SD = standard deviation

Table 3.***Open-ended Question Major Theme Findings with Supporting Quotes***

1. **Do you feel like you can control getting in “flow” (being in the zone or an effortless performance)? Yes or no? Please explain what factors you view as controllable or uncontrollable.**
 - A. **Flow Is Not Controllable. (20)**
“I can’t control flow at all.”(Basketball)
“I think that it is uncontrollable and it just happens in the moment.”(Tennis)
 - B. **Flow Is Controllable. (12)**
“I feel like I can control getting into flow when I block out everything else around me.”(Baseball)
2. **Did your personal experience of flow result in your team winning the game (team sport) or the event/match (individual sport)? Yes or no? Please explain the outcome to the best of your ability.**
 - A. **Team Won – Team Was In Flow – Team Had Best Performance. (20)**
“I felt like my entire team was in flow at the time. All of us were working together as one.”(Volleyball)
 - B. **Individual Won. (6)**
“I was losing so bad, then I got into flow and it changed the game. It was amazing how I was playing.”(Tennis)
3. **Did your personal experience of flow result in a personal best or personal record? Please explain (Example: Personal best time or career high in points).**
 - A. **Flow Equaled A Best Performance Or Personal Record. (36)**
“I scored my career high in points.”(Basketball)
“It lead to a personal best at that time and a school record.”(Track & Field)
 - B. **Flow Did Not Result In A Best Performance. (9)**
“No, however it was one of the better games of my career.” (Baseball)
4. **What is the best part of the experience of flow? Please explain to the best of your ability.**
 - A. **Effortless – Little Thought – No Worries (8)**
“Do not have to worry about anything, you just play.”(Basketball)
“The ease of nerves, total control, and no thoughts of failure whatsoever.”(Baseball)
 - B. **Training Paid Off – Hard Work – Results (9)**
“The best part is when it actually pays off and you realize that the practice you were doing actually did what it was supposed to.”(Track & Field)
 - C. **The Joy And Happiness – The Feeling After – A “High” (10)**
“The feeling after is so good and gratifying.”(Tennis)

D. Confidence – No One Can Beat You – Nothing Can Go Wrong (12)

“It feels like you are unstoppable.”(Tennis)

*“The way you feel, your confidence level, you feel almost unbeatable.”
(Cross Country/Track & Field)*

“I feel as if nothing can go wrong.” (Volleyball)

5. To what extent do you believe the sport being played, either an individual sport or team sport, factors in the experience of flow?

A. Flow Is Easier To Achieve In Individual Sport (4)

“I think that it would be easier to experience flow on an individual level because you don’t have to worry about coming out of flow due to a teammate’s error.” (Volleyball)

B. Flow Is Easier To Achieve In Team Sport – The Team Aspect Creates A Better Overall Experience (8)

“I believe when a team is doing well as a whole, it is easier to get into flow.”(Baseball)

C. Sport Does Not Matter – Little To No Effect On Flow (13)

“I think in any sport you play, you can get into the zone.”(Basketball)

Note. Numbers in parenthesis represent number of responses corresponding to that theme.

APPENDICES

Appendix A

Dear Coach,

I am a candidate for a Master's Degree in Sport and Fitness Administration. Currently I am in the process of collecting data for my thesis. The thesis examines the concept of differences between optimal experiences in individual sports vs. team sports. Specifically, I am looking at the how concept of "flow" or "being in the zone" differs between individual athletes and athletes in a team setting. Both concepts have been studied on their own but there is not much research on the comparison of the differences between the two. I am classifying individual sports as cross country, golf, track & field, and tennis (singles), while team sports will be basketball, soccer, and volleyball for the purposes of the study.

I am inviting you and your team to participate in this study. Enclosed you will find a link to an online survey via Qualtrics. I kindly ask you to distribute the link to your athletes and encourage them to complete it. The questionnaire should take approximately 20 minutes to complete.

I sincerely thank you for assisting me with this project in the completion of my thesis. I also want to thank you for contributing to the understanding of optimal experience. If you have any questions about this study or the results you may contact me at the above address or phone number or my thesis advisor Dr. Joni Boyd.

Sincerely,

Andy Worthington

Appendix B

Dear Mr. Hickman,

My name is Andy Worthington and I am a candidate for a Master's Degree in Sport and Fitness Administration here at Winthrop. In partial fulfillment of this degree, I am in the process of completing a Master thesis on "flow" in sport or optimal experience. Specifically, I am looking at the differences of flow in individual sport athletes and team sport athletes. I am writing to request your permission to administer a questionnaire to student-athletes here at Winthrop University. Should you approve, the coaches of each team will be contacted as well in order to gain their approval. Upon the coach's approval, I will send a link to each coach for an online survey via Qualtrics. The student-athletes will be informed on the purpose of the study and participation will be voluntary. If the student-athlete agrees to participate, he or she will then complete a survey known as the Flow State Scale, a short demographic section, and some follow-up open ended questions pertaining to flow. The questionnaire should take approximately 20 minutes to complete. No names or personal information will be required of the student-athletes. However, all raw data will be kept confidential to protect the participants.

I have included a copy of the questionnaire that would be distributed to the student-athletes. Please sign and return this form if your approval is granted. If you have any questions or concerns, please contact me at my e-mail address. The faculty chair member for this Master Thesis is Dr. Joni Boyd. Feel free to contact Dr. Boyd with any questions you may have at. Thanks for your time and consideration.

Sincerely,

Andy Worthington

Appendix C

You are being invited to participate in a research study that is examining optimal experience in college athletes. Specifically, the study will look at how the concept of “flow” or “being in the zone” differs between individual athletes and athletes in a team setting.

If you chose to take part in this study, you will be asked to complete a survey that will take about 20 minutes. This study consists of a series 36 questions pertaining to different dimensions of optimal experience in sport. After the questionnaire, there are six follow-up questions to further examine the state of flow. These questions are looking for more of an explanation.

As a participant you will not benefit directly from this study. However, your participation will be greatly appreciated for the completion of the thesis required for graduation. The research will also contribute to the growing field of sport psychology. A number of studies have been done on optimal experience or “flow” but few have compared the differences between individual and team sports.

The information you provide will remain private. Information obtained through this study will only be used by the research staff. All data will be kept secure online using encrypted passwords.

Please know that your participation in this study is voluntary. If you choose not to take part in the survey, there will be no penalty. You may quit the study at any time by closing out of the survey. You may also choose not to answer a question without penalty. All data is kept private and confidential, only the results will be reported. Your choice to participate or not participate in this study will not reflect on you as a student of the University.

Your information will be used strictly for this research study only, will not be shared with anyone else, and you will not receive any spam emails related to participation in this study.

If you have any questions or concerns, we encourage you to contact:

Andy Worthington or you may also call the Office of Sponsored Programs at Winthrop University.

By choosing to continue, you agree to take part in the study.

Thank you for interest in the study.

Andy R. Worthington

Joni D. Boyd, Ph.D

College of Education, Sport and Fitness Administration, Winthrop University

Appendix D

IRB Consent



WINTHROP
UNIVERSITY

Sponsored Programs and Research

IRB PROTOCOL #: IRB15115
 TITLE OF PROJECT: Flow: Individual vs. Team Sport
 RESEARCHER OF RECORD: Andy Worthington
 CO-RESEARCHERS:
 FACULTY ADVISOR: Joni Marr, Ph.D.

EXEMPTION DATE: April 23, 2015
 EXEMPTION CATEGORY: 14(b) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior unless (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; or (b) any disclosure of the human subjects' responses outside the research could reasonably place the subject at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability or reputation. [45CFR46(b)(2)]

Research involving children (subjects who have not attained the age of 18 years) is not exempt unless the research involves only the observation of public behavior and the researchers do not participate or impact the activities being observed. [45CFR46.401(b)]

The Request for Review of Research Involving Human Subjects identified above has been reviewed by the Winthrop University Institutional Review Board (IRB) and has been determined to be exempt from IRB review. You may begin your research on or after the Exemption date show above.

A Request for Modification of Previously Approved or Exempt Protocol must be completed by the researcher and submitted to the IRB for review for any proposed changes or modifications to the protocol. IRB approval must be received prior to amended changes or modifications being

implemented by the researcher. These changes may include a change in a survey instrument, the addition or deletion of a research site, a change in personnel, a change in methodology or a change in the Researcher of Record.

Use the form *Adverse Event Report* to report any negative consequences that occur as a result of participation in a research project. . An “adverse event” or “adverse experience” is an undesirable and unintended, though not necessarily unanticipated, injury or physical or emotional consequence to a human subject. “Unanticipated Problems” may or may not include specific events experienced by individual subjects, but are developments within the research activity that suggest a potential for increased risks to subjects or others.

Aaron Hartel, Ph.D.,Chair

Winthrop University Institutional Review Board

IRB15115.M1

01/07/2008

Winthrop University

Request for Modification of Previously Approved or Exempt Protocol

Instructions: Complete this form along with a revised protocol and/or other related documents. Submit an electronic copy, to Deborah Broome, Compliance Officer, Sponsored Programs and Research (broomed@winthrop.edu). Your email will serve as your signature.

RESEARCHER OF RECORD: Andy Worthington COLLEGE/DEPARTMENT: College of Education	
CO-RESEARCHERS:	
TITLE OF RESEARCH: Flow: Individual vs. Team Sport	
PROTOCOL NUMBER: IRB15115	DATE OF APPROVAL: April 23, 2015 EXEMPT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
DATES OF THE RESEARCH PROJECT: Beginning Date: 9/1/15 Ending Date: 5/1/16	
Type of Modification Request (Check all that apply):	
<input type="checkbox"/> Change in Researcher of Record or Co-Researchers <input checked="" type="checkbox"/> Modification in the data collection surveys, procedures or other methods <input type="checkbox"/> Modification in subject selection criteria or recruitment methods <input type="checkbox"/> Modification to the Informed Consent form <input type="checkbox"/> Modification to the Parental or Guardian Permission for a Minor Child to Participate in a Research Study form <input type="checkbox"/> Modification to the Assent to Participate in a Research Study form <input type="checkbox"/> Modification to the scope of the research project <input type="checkbox"/> Change in the start and/or end dates of the project [You do not need to complete a new protocol if this is your only change.]	
Explanation or justification for changes noted above: Adding one question to the end of already approved survey (Flow State Scale) and open-ended questions. Please see question # 41. This question is the basis of what my research is about and I would like to find out the athlete's perceptions of my overall research question.	
<i>via email</i> <hr/> Signature of Researcher of Record	9/16/15 <hr/> Date

This section to be completed by the IRB Chair

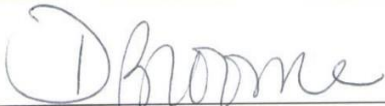
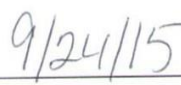
For Expedited and Full Proposals:

 Approved Not Approved

For Exempt Proposals:

 Validated as continuing to meet the criteria for exempt status.
 Not validated as continuing to meet the criteria for exempt status.

01/07/2008

	
Deborah Broome, Compliance Officer Sponsored Programs & Research	Date

Note: Do not include personal home address and phone numbers on Informed Consent, Assent, Parental Permission or Debriefing forms. If you are a student, please use your faculty mentor's office address and phone number. As a student, you may show your Winthrop email address as a contact point.

Appendix E

Flow State Scale

Please think back to a time in your athletic career when you experienced a performance that would often be described as being “in the zone”. Within sport psychology, this state is known as flow and can be described as an optimal performance or experience in which one “cannot miss” or “feels effortless”. Please answer the following questions in relation to that experience. These questions relate to the thoughts and feelings you may have experienced during the event. There are no right or wrong answers. Circle the number that best matches your experience from the options to the right of each question.

Rating Scale:

Strongly disagree / Disagree / Neither agree nor disagree / Agree / Strongly agree

	1	2	3	4	5
1. I was challenged, but I believed my skills would allow me to meet the challenge.	1	2	3	4	5
2. I made the correct movements without Thinking about trying to do so.	1	2	3	4	5
3. I knew clearly what I wanted to do.	1	2	3	4	5
4. It was really clear to me that I was doing well.	1	2	3	4	5
5. My attention was focused entirely on what I was doing.	1	2	3	4	5
6. I felt in total control of what I was doing.	1	2	3	4	5
7. I was not concerned with what others may have been thinking of me.	1	2	3	4	5
8. Time seemed to alter (either slowed down or speeded up).	1	2	3	4	5
9. I really enjoyed the experience.	1	2	3	4	5
10. My abilities matched the high challenge of the situation.	1	2	3	4	5
11. Things just seemed to be happening automatically.	1	2	3	4	5
12. I had a strong sense of what I wanted to do.	1	2	3	4	5
13. I was aware of how well I was performing.	1	2	3	4	5
14. It was no effort to keep my mind on what was happening.	1	2	3	4	5

15. I felt like I could control what I was doing.	1	2	3	4	5
16. I was not worried about my performance during the event.	1	2	3	4	5
17. The way time passed seemed to be different from normal.	1	2	3	4	5
18. I loved the feeling of that performance and want to capture it again.	1	2	3	4	5
19. I felt I was competent enough to meet the high demands of the situation.	1	2	3	4	5
20. I performed automatically.	1	2	3	4	5
21. I knew what I wanted to achieve.	1	2	3	4	5
22. I had a good idea while I was performing about how well I was doing.	1	2	3	4	5
23. I had total concentration.	1	2	3	4	5
24. I had a feeling of total control.	1	2	3	4	5
25. I was not concerned with how I was presenting myself.	1	2	3	4	5
26. It felt like time stopped while I was performing.	1	2	3	4	5
27. The experience left me feeling great.	1	2	3	4	5
28. The challenge and my skills were at an equally high level.	1	2	3	4	5
29. I did things spontaneously and automatically without having to think.	1	2	3	4	5
30. My goals were clearly defined.	1	2	3	4	5
31. I could tell by the way I was performing how well I was doing.	1	2	3	4	5
32. I was completely focused on the task at hand.	1	2	3	4	5
33. I felt in total control of my body.	1	2	3	4	5
34. I was no worried about what others may have been thinking of me.	1	2	3	4	5
35. At times, it almost seemed like things were happening in slow motion.	1	2	3	4	5
36. I found the experience extremely rewarding.	1	2	3	4	5

Appendix F

The following are some open ended questions with the purpose of gathering more information on the experience of flow. Please answer these questions with the sport you are participating in here at Winthrop in mind. If the flow state was achieved in practice, that still warrants a response. If the flow state was achieved in high school or another time but occurred in the sport you are participating in here at Winthrop, please share that experience as well.

37. Have you ever experienced flow? Yes or no?

A. If not, please explain why you feel as though you have not.

38. Do you feel like you can control getting into “flow” (being in the zone or an effortless performance)? Yes or no? Please explain what factors you view as controllable or uncontrollable.

39. A. Did your personal experience of flow result in your team winning the game (team sport) or the event/match (individual sport)? Yes or No? Please explain the outcome to the best of your ability.

B. Did your personal experience of flow result in a personal best or personal record? Please explain (Example: Personal best time or career high in points).

40. What is the best part of the experience of flow? Please explain in detail to the best of your ability.

41. To what extent do you believe the sport being played, either an individual sport or team sport, factors into the experience of flow?

References

- Bakker, A. B., Oerlemans, W., Demerouti, E., Slot, B., & Ali, D. (2011). Flow and performance: A study among talented Dutch soccer players. *Psychology of Sport & Exercise, 12*(4), 442-450.
- Cathcart, S., McGregor, M., & Groundwater, E. (2014). Mindfulness and Flow in Elite Athletes. *Journal of Clinical Sport Psychology, 8*(2) 119-141.
- Chavez, E. J. (2008). Flow in Sport: A Study of College Athletes. *Imagination, Cognition, and Personality, 28*(1), 69-91.
- Cosma, J. B. (1999). Flow in Teams. (Doctoral dissertation, The Chicago School of Professional Psychology). Retrieved from Springfield College through Interlibrary loan.
- Crust, L., & Swann, C. (2013). The relationship between mental toughness and dispositional flow. *European Journal of Sport Science, 13*(2), 215-220.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.
- Kaufman, K. A., Glass, C. R., & Arnkoff, D. B. (2009). Evaluation of Mindful Sport Performance Enhancement (MSPE): A New Approach to Promote Flow in Athletes. *Journal of Clinical Sport Psychology, 3*(4), 334-356.
- Koehn, S., Morris, T., & Watt, A. P. (2014). Imagery Intervention to Increase Flow State and Performance in Competition. *Sport Psychologist, 28*(1), 48-59.

- Kowal, J., & Fortier, M. S. (1999). Motivational Determinants of Flow: Contributions from Self-Determination Theory. *Journal of Social Psychology, 139*(3), 355-368.
- Jackson, S. A. (1995). Factors Influencing the Occurrence of Flow State in Elite Athletes. *Journal of Applied Sport Psychology, 7*, 138-166.
- Jackson, S. A. (1996). Toward a Conceptual Understanding of the Flow Experience in Elite Athletes. *Research Quarterly for Exercise and Sport, 67*(1), 76-89.
- Jackson, S. A., & Ford, S. K. (1998). Psychological correlates of flow in sport. *Journal of Sport & Exercise Psychology, 20*(4), 358-378.
- Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal. *Journal of Sport & Exercise Psychology, 18*(1), 17-35.
- 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*, 129-153.
- Merriam, Sharan B. *Qualitative Research: A Guide to Design and Implementation: A Guide to Design and Implementation* (3rd Edition). Somerset, NJ, USA: Wiley, 2014. ProQuest ebrary. Web. 21 February 2016.
- Privette, G., & Bundrick, C.M., (1997). Psychological Processes of Peak, Average, and Failing Performance in Sport. *International Journal of Sport Psychology, 28*, 323-334.

- Russell, W. D. (2001). An Examination of Flow State Occurrence in College Athletes. *Journal of Sport Behavior*, 24(1), 83-105.
- Schuler, J., & Brunner, S. (2009). The rewarding effect of flow experience on performance in a marathon race. *Psychology of Sport and Exercise*, 168-174.
- Stavrou, N. A., Jackson, S. A., Zervas, Y., & Karteroliotis, K. (2007). Flow Experience and Athletes' Performance With Reference to the Orthogonal Model of Flow. *Sport Psychologist*, 21(4), 438-457.
- Stavrou, N.A., & Zervas, Y. (2004). Confirmatory factor analysis of the flow state scale in sports. *International Journal of Sport and Exercise Psychology*, 2(2), 161-181.
- Swann, C., Keegan, R. J., Piggott, D., & Crust, L. (2012). A systematic review of the experience, occurrence, and controllability of flow states in elite sport. *Psychology of Sport & Exercise*, 13(6), 807-819.
- Young, J. A., & Pain, M. D. (1999). The zone: evidence of a universal phenomenon for athletes across sports. *Athletic Insight*, 1(3), 21-28.