

## **Psychological flow differences in basketball players with and without disabilities**

Konstantina Myrintzi<sup>1</sup>, Kostopoulos Nikolaos<sup>2</sup>, Mitsopoulos Nikolaos<sup>3</sup>, Gkinis Ioannis<sup>4</sup> and Skordilis Emmanouil<sup>5\*</sup>

*School of Physical Education and sport science, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens*

*School of Physical Education and sport science, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens*

*School of Physical Education and sport science, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens*

*School of Physical Education and sport science, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens*

*School of Physical Education and sport science, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens*

---

**Abstract:** The study aims to examine the flow in athletes with or without disabilities, to associate it with the emotions experienced and to examine how it affects their performance. The participants were 33 disabled female and male basketball players on international, local or national level as well as 43 athletes (female and male) with equivalent athletic experience but no disabilities. They were adults with comprehension ability and filled out the questionnaire about flow, the Sport Motivation Scale II and the Basic Psychological Need Scale. The results showed significant correlations between the FSS and BPNS, certifying that the internal motives in a game are connected to the optimal experience in basketball athletes in total. The present study is the first attempt ever recorded in international bibliography to imprint the phenomenon of flow in athletes with disabilities. Further research is required to certify the factors which affect the flow in athletes who differ considering the sport, disability's kind, its starting point, etc

**Keywords:** Flow, Sport Motivation Scale, Basic Psychological Need Scale, athleticism

---

### **1. Introduction**

As a psychological state, we define flow as a mental state that a person enters when engaged in activities that are in complete alignment with their abilities and that they fully focus on (Csikszentmihalyi, 1982, 1990; among others in Karakasidou, 2012). The emotions that we feel when in flow are positive and result from the satisfaction we derive from the act that we have focused our attention on (Csikszentmihalyi, 1988; among others in Karakasidou, 2012). It is characterized by high levels of concentration, clear goals, internal motivation, pleasure, satisfaction, control of emotions, and absorption in any activity being performed (Csikszentmihalyi, 1982, 1988). It is estimated that 10-15% of the population experiences flow on a daily basis, while a corresponding percentage of the population has never experienced it. In addition, people do not experience flow to the same extent and intensity at all times. The experience of flow is something that we can all experience when we repeatedly perform tasks that allow us to maximize our abilities. Examples of where our fellow humans have experienced the positive emotions of flow include engagement with music, dance, sports, etc. (Csikszentmihalyi, 1982).

Psychological flow has been studied in recent years in sports as well, and researchers in Applied Sport Psychology have examined how they can lead their athletes to experience a similar state of well-being during the competition (Csikszentmihalyi, 1988; cited in Karakasidou, 2012). The most suitable conditions exist when the athlete achieves a balance between the demands of the competition and their skills, while conversely, if the effort is easier or more difficult than their abilities, they will experience apathy or anxiety respectively (Csikszentmihalyi, 1988). Specifically, Csikszentmihalyi (1975, 1982) stated that the following conditions are favorable prerequisites for its occurrence: 1. development and improvement of skills through training, 2. ideal environmental conditions, 3. improvement of concentration and attention, 4. increased self-confidence, 5. positive interaction with others (coach, teammates), and 6. creation of positive experiences. Additionally, an athlete's personality traits, such as predisposition to anxiety, type of sport, the difficulty and importance of the competition, self-confidence, belief in their abilities, and high intrinsic motivation are factors that affect flow. In other words, the subjective experience, how the individual perceives both their skills and the challenges they face, is crucial in the occurrence of flow.

## **2. Review of Related Researches**

Research data from the field of sports varies and has been encouraging in recent years. Specifically, Jackson and colleagues (2010) examined the empirical relationship between flow and performance in athletes from 3 different competitive sports. The researchers attempted to understand the factors that could be associated with flow and observed positive relationships between flow, self-perception, and the performance of athletes (Jackson et al., 2010). Koehn (2012) argued that self-confidence and anxiety are important factors for the presence of flow in sports. The researcher claimed that self-confidence leads to a positive relationship while anxiety leads to a negative relationship with regard to the flow experienced during the activity. 59 young tennis players participated in the study, and the results showed significant correlations between anxiety, self-confidence, and flow, thus verifying the initial research hypotheses (Koehn, 2012). Stavrou and colleagues (2015) examined the relationship between flow and goal orientation theory in 272 athletes from 7 individual sports (athletics, swimming, archery, canoe-kayak, skiing, cycling, and table tennis). The participants, aged 16-35 years, were evaluated 1 hour before the start of the competition based on how they felt at that time, as well as 30 minutes after the end of the game, based on what they felt during the game. The results showed that athletes' goal orientation was an important factor in achieving flow and made them feel more competent for the challenge of the next game (Stavrou et al., 2015)

The flow theory has recently engaged researchers in sports for people with disabilities. Specifically, Martin (2008) evaluated a series of variables that explain the socio-cognitive state experienced by athletes with disabilities during the game. The theories of self-efficacy by Bandura (1997), disposition (Campbell, 1995), and flow (Jackson, 2000) were used in 79 adult wheelchair basketball players. Martin (2008) found that effective athletes who face difficulties could also overcome negative thoughts and have more control during training and competition. Bailis and colleagues (2001) supported that people with disabilities create unfavorable conditions for their significant performances to maintain their esteem in case of failure or to enhance their esteem in case of success. The participants were 15 university swimmers and 14 wrestlers.

Self-reports regarding preparation, anxiety, performance, and flow experiences were repeatedly taken during competitions for 4 months. Athletes' disability scores were positively related to performance and self-reported optimal flow experiences in competitions (Brain, 2004). Martin and Whalen (2012) supported in their research that individuals with disabilities face a range of social, environmental, and individual problems for their participation in Paralympic sport. Through sports, the multidimensional theory of self-perception is strengthened, and self-perception is considered to affect a range of emotional, cognitive, social, and behavioral indicators. The multidimensional physical self-perception has its roots in the recognition that individuals have self-resilience in various areas. Fifty athletes with sports experience (26 women, 24 men) aged 13-64 years participated. Disabilities included cerebral palsy, spina bifida, muscular dystrophy, spinal cord injury, and others.

Physical self-description questionnaires (PSDQ-5) consisting of 40 questions were used. The athletes reported neutral to positive perceptions of their physical self-concept. Ultimately, global physical self-concept and self-perceptions of physical strength were significant predictors of global self-concept. All of these findings promote training programs with special weights and programs in Paralympic sports.

## **3. Method**

In total, 76 athletes participated, initially divided into 39 men and 37 women, as well as athletes with disabilities, where there were 33 and without disabilities, which were 43. The 32 athletes who participated in international or national basketball games for people with disabilities were evaluated accordingly. Similarly, the responses of 43 non-disabled athletes who participated in international, national, or local competitions were evaluated. All athletes were adults with the ability to understand the questions. In proportion, non-disabled athletes would have similar demographic characteristics to their disabled peers (age, gender, sport). Sports clubs were selected from all over Greece, and information about the research program and its purposes was also provided. Participants initially completed a consent questionnaire, followed by a demographic questionnaire. Then, they completed the Flow State Scale (FSS), the Basic Psychological Needs in Sport Scale (BPNS), and finally the Sport Motivation Scale (SMS-II) questionnaire.

## **4. Results**

The results of the research were derived from the statistical processing of the data collected from the questionnaires on general and psychological characteristics of both athletes with disabilities and without disabilities, as well as the questionnaire on their competitive status.

Before conducting the basic analyses that also address the research hypotheses of this study, preliminary analyses were performed to test the reliability of the research variables. A Cronbach-A analysis was conducted for the 18 dependent variables of our research questionnaires. The analysis showed that the reliability indices for

the psychological flow questionnaires (FSS) ranged from 31 to 78, while for the scale of needs in sports (BPNS) they ranged from 66 to 79. However, the reliability indices for the SPORT MOTIVATION SCALE (SMS) questionnaire appeared to be moderate to low, ranging from .08 to .54.

The sample of the present research consisted of 76 basketball players, with and without disabilities. Of the total participants, 39 were men and 37 were women who played on teams mainly of national categories. 29 athletes were members of either the men's-women's national basketball teams or the national wheelchair basketball and deaf teams. Of the total athletes, 33 had a disability, 11 of whom were diagnosed with a sensory disability (deafness), while 22 were diagnosed with mobility disabilities. The age of all participants ranged from 18 to 72 years old. Finally, all the athletes in our research had at least 5 years of experience in the sport.

The relationship between the emotional state of the athletes and flow was then evaluated. For this purpose, the Pearson correlation coefficient was used to evaluate the relationship between the 9 FSS factors with the 3 factors of the BPNS and the 6 factors of the SMS-II. The results showed significant correlations between the 9 FSS factors and the 3 factors of the BPNS, while no significant correlations were found between the FSS and the SMS-II.

Then, the psychological flow was evaluated with performance, and for this purpose, 2 analyses were used: (a) the time of participation in the game was correlated with the 9 FSS factors, (b) the responses of international and non-international participants were compared on the FSS factors. Regarding the first approach, significant correlations were found between the time of participation and the 9 factors, ranging from 397 to 731.

Then, the differences between international and non-athletes in FSS were evaluated. The multivariate analysis was not significant ( $\lambda=.823$ ,  $F=1,574$ ,  $p=.141$ ,  $\eta^2=.177$ ), but the univariate post hoc analyses showed significant differences in the balance of challenges-skills ( $F=5,316$ ,  $p=.024$ ,  $\eta^2=.067$ ), energy-merger awareness ( $F=6,111$ ,  $p=.016$ ,  $\eta^2=.076$ ), sense of control ( $F=4,537$ ,  $p=.036$ ,  $\eta^2=.058$ ), and loss of self-consciousness ( $F=4,528$ ,  $p=.037$ ,  $\eta^2=.058$ ).

Subsequently, differences were evaluated with respect to the gender of the participants in the 9 factors of the FSS. The multivariate results were not significant ( $\lambda=0.808$ ,  $F=1.747$ ,  $p=0.096$ ,  $\eta^2=0.192$ ), but the univariate analyses revealed significant differences in the sense of control ( $F=4.059$ ,  $p=0.048$ ,  $\eta^2=0.052$ ).

Finally, differences were evaluated in athletes with and without disabilities in the 9 factors of the FSS. The multivariate results were not significant ( $\lambda=0.858$ ,  $F=1.214$ ,  $p=0.302$ ,  $\eta^2=0.142$ ), but the univariate analyses showed significant differences in the merging of energy and consciousness ( $F=4.489$ ,  $p=0.037$ ,  $\eta^2=0.057$ ).

## 5. Conclusions

This study examined the phenomenon of flow in basketball athletes with and without disabilities. A significant relationship was found between flow and the needs experienced by athletes, confirming that internal motivators are connected to the flow that basketball players potentially experience during games. Additionally, flow was related to the length of participation, while international and non-international athletes differed in terms of sense of control, balance of challenges and abilities, merging of action and awareness, and loss of self-consciousness. Men had a higher sense of control than women, while athletes with disabilities had a higher merging of action and awareness compared to their teammates.

## 6. Other Recommendations

According to the findings of this study, we can conclude that flow helps us understand why people engage in activities with maximum performance and motivation. Through the completion of this research, it could provide motivation for researchers to enrich the theoretical background of flow psychology in athletes with and without disabilities, as well as to strengthen research in the field of Paralympic sports. Another useful conclusion is that no differences were found between athletes with and without disabilities overall, leading to the assumption that in sports, athletes are more similar than dissimilar in their emotional state and flow. Additionally, the importance of this research is identified in the significance it holds for athletic performance and emotional balance in the life of an athlete with sensory or mobility impairments. The above perception is verified when an athlete with a disability experiences flow, whereby the individual is flooded with positive emotions, concentration on goal fulfillment, internal motivation, and satisfaction. Moreover, when a person experiences flow, an ideal state of total involvement in an activity is prevailing.

According to the findings of this study, we can conclude that flow helps us understand why people engage in activities with maximum performance and motivation. Through the completion of this research, it could provide motivation for researchers to enrich the theoretical background of flow psychology in athletes with and without disabilities, as well as to strengthen research in the field of Paralympic sports. Another useful conclusion is that no differences were found between athletes with and without disabilities overall, leading to the assumption that in sports, athletes are more similar than dissimilar in their emotional state and flow. Additionally, the importance of this research is identified in the significance it holds for athletic performance

and emotional balance in the life of an athlete with sensory or mobility impairments. The above perception is verified when an athlete with a disability experiences flow, whereby the individual is flooded with positive emotions, concentration on goal fulfillment, internal motivation, and satisfaction. Moreover, when a person experiences flow, an ideal state of total involvement in an activity is prevailing.

Balance between the challenges and skills of the individual in the specific activity (Csikszentmihalyi, 1975). The above lead us to the conclusion that the individual can transform, reconstruct the balance of environment and abilities, so as to make psychological flow possible. Ultimately, this research aims to prove that when sports and psychological flow coexist in the life of a disabled athlete, the chances of success increase without disability.

### References

- [1]. Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman
- [2]. Brain, I. (2004). Perceptions of disability and their impact upon involvement in sport for people with disabilities at all levels. *Journal of sports and social issue*, 28(4), 429-452. <https://doi.org/10.1177/0193723504268729>
- [3]. Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*. Jossey-Bass.
- [4]. Csikszentmihalyi, M. (1982). Towards a psychology of optimal experience. In L. Wheeler (Ed.), *Annual Review of Personality and Social Psychology* Vol.3, pp. 13-36. Sage. DOI: 10.1007/978-94-017-9088-8\_14
- [5]. Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), *Optimal Experience: Psychological studies of flow in consciousness*, pp. 15-35. Cambridge University Press. BF311.O63 1988
- [6]. Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. Harper and Row
- [7]. Jackson, S.A. (2000). Joy, fun, and flow state in sport. In Y.L. Hanin (Ed.), *Emotions in sport*, pp. 135-155. Champaign: Human Kinetics. <https://doi.org/10.2190/IC.28.1.f>
- [8]. Jackson, S.A., Thomas, P., Marsh, H.W. & Smethurst, C.J. (2010). Relationships between Flow, Self-Concept, Psychological Skills, and Performance. *Journal of Applied Sport Psychology*. DOI:10.1080/104132001753149865
- [9]. Karakasidou (2012). Positive feelings and psychological flow: relationship between them and their role in sports performance.
- [10]. Koehn, S. (2012). Effects of confidence and anxiety on flow state in competition. *European Journal of Sport Science*. DOI: 10.1080/17461391.2012.746731
- [11]. Martin, J. (2008). Multidimensional Self-Efficacy and Affect in Wheelchair Basketball Players. *Adapted Physical Activity Quarterly*, 25, 275-288. DOI:10.1123/apaq.25.4.275
- [12]. Martin, J. & Whalen, L. (2012). Self-concept and physical activity in athletes with physical disabilities. *Disability and health journal*, 5, 197-200. DOI: 10.1016/j.dhjo.2012.03.006
- [13]. Stavrou, N. A., Psychountaki, M., Georgiadis, E., Karteroliotis, K. & Zervas, Y. (2015). Flow theory - Goal orientation theory: Positive experience is related to athlete's goal orientation. *Frontiers in Psychology*, 6. <https://psycnet.apa.org/record/2016-22349-001>

### Author Profile

**Myrintzi Konstantina** graduated from the department of Physical Education and Sports of Athens with specialization in basketball and adaptive motor behavior. Now, she is a graduated master student of the department of Physical Education and Sports of Athens in the field of sports coaching.