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CANADIAN UNIVERSITY WOMEN'S BASKETBALL IN THE ZONE: AN EXAMINATION OF FLOW STATE EXPERIENCES

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Abstract:
Since first proposed by Csikszentmihalyi in 1975, flow theory has been studied in work environments, education, leisure studies, and sports; however, investigations corresponding to flow in sports typically have been restricted to individual performances, with little research into team sports and even less in women's team sports. This study investigated eight case studies of female university basketball players at Canadian universities. While confirming previous research into flow experiences, the study also identified some key factors, such as the relatively rare occurrence of flow experiences, the fragility of flow experiences, and the differential impact on individual players of the nine characteristics of flow. In addition, the study identified factors for coaches who wish to optimize flow experiences for their teams.

Keywords: flow; coaching; basketball; player psychology

1. Introduction

Identified by Csikszentmihalyi (1975), flow (colloquially, being "in the zone" or "in the groove") is a psychological state characterized by energized focus, complete absorption, and enjoyment when performing an activity. Flow has been investigated in several areas, including work, education, and sport. Jackson and Csikszentmihalyi's (1999) book *Flow in Sports: The Keys to Optimal Experiences and Performances* utilized interviews and questionnaires from hundreds of elite athletes across a wide array of sports to build a portrait of the flow experience in athletics. Young and Pain (1999) confirmed that the flow state is not sport-specific and applied across sports.

Since flow is a personal experience, the majority of research on flow in sports involves athletes' perceptions from participation in individual sports such as cycling, swimming, and track. Flow experiences for athletes who participate in team sports such

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as basketball remain an area that could benefit from further study. This paper employed a mixed methods methodology to investigate the flow experiences of Canadian university women's basketball players based on data collected during 2021.

2. Review of the Literature

Csikszentmihalyi (1975) identified a critical element of flow as the balance of skills and task challenges. He proposed the flow channel (Figure 1) to illustrate this concept. If one's skill level is low related to the challenge of the task, the result is anxiety. Alternatively, if one's skill level is significantly higher than the challenge of the task, the result is boredom. However, when the task challenge matches the skill level, there is potential for achieving a state of flow.

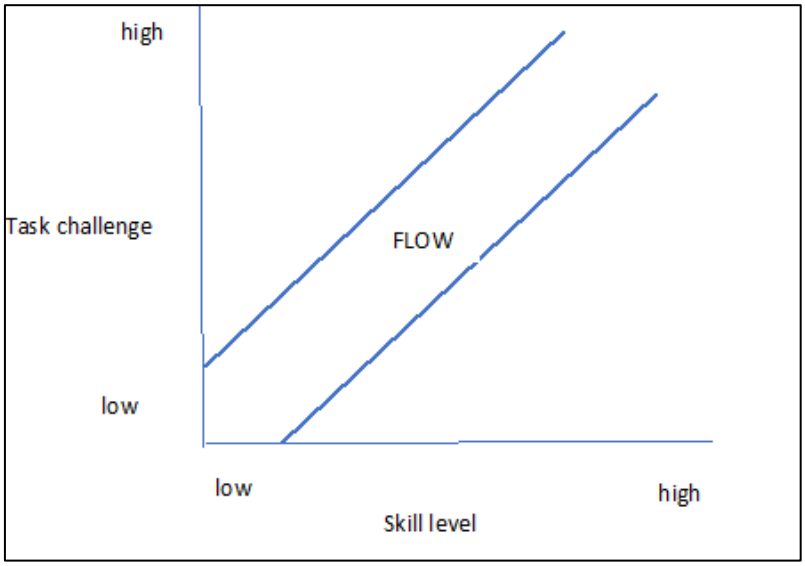

Figure 1: Flow Channel: Skill Level = Task Challenge

Csikszentmihalyi (1990, 1997, 2000) subsequently extended his consideration of flow by examining eight potential matchings of skill level and challenge (Figure 2). Consider first tasks with low levels of challenge: If the participant's skill level is also low, the task is achievable, but apathy will result; if the participant has a medium level of skills, the result is boredom, and if the participant has a high level of skill, the participant will easily accomplish the task and will experience relaxation. Next, consider tasks with a medium level of challenge: Participants with low levels of skill will experience worry; participants with high skill levels will feel in control of the situation. Finally, if the challenge level of the task is high, participants with low skill levels will be anxious since they will be unable to successfully complete the task; participants with medium skill levels will feel arousal as they attempt to meet the high level of challenge; however, participants with high skill levels will experience a state of flow as they rise to the challenge of the task.

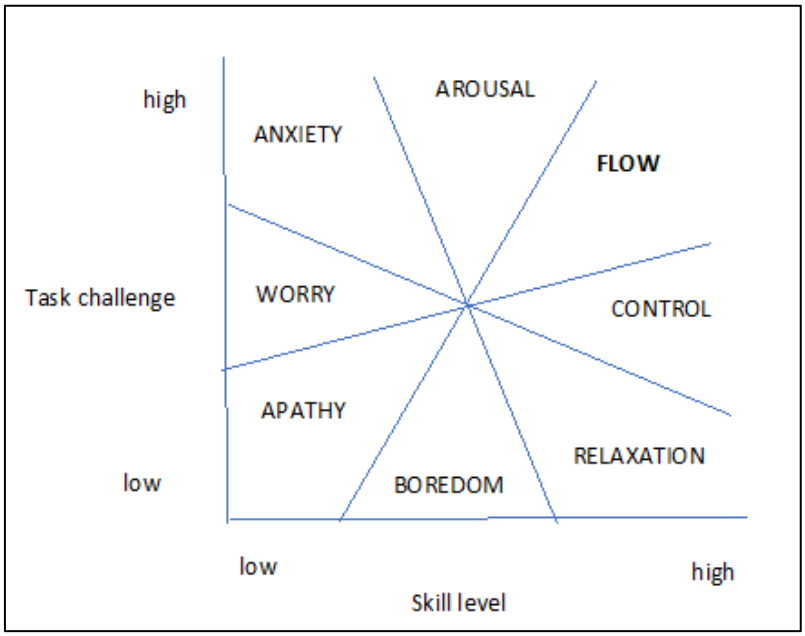

Figure 2: Flow and Related Psychological States

Jackson and Csikszentmihalyi (1999) have studied flow extensively in relation to sports and have identified nine factors that indicate a flow state in athletes. These are:

- A balance between challenge and skills, usually a task with a high level of challenge, but achievable with a high level of skill.
- The merging of action and awareness, so that the activity becomes automatic or spontaneous.
- Goals that are clear and well-defined.
- Immediate and clear feedback on performance, typically from the activity itself.
- Total concentration on the task at hand.
- A sense of control of oneself, especially control of a difficult situation.
- Loss of self-consciousness, which Csikszentmihalyi (1990) describes as becoming one with the activity.
- Altered perceptions of time, either speeding up or slowing down.
- An autotelic experience, which indicates that the experience is intrinsically rewarding to the participant and not directly related to extrinsic rewards (such as winning a game).

Flow has been researched extensively in relation to work (Demerouti, 2006; Eisenberger et al., 2005; Salanova et al., 2006). This may be because work situations provide multiple opportunities for high skill–high challenge occasions (Caniëls et al., 2021). Flow has also been studied in education (Bakker, 2005, 2008; Bassi & Delle Fave, 2012) as well as economics (Csikszentmihalyi, 1999), leisure studies (Vrooman et al., 2022), and sports (Jackson & Csikszentmihalyi, 1999; Locke, 2008; Young & Pain, 1999). University sports participation has elements of both volition and work. Although choosing to participate is clearly voluntary, the time and effort required by members of a university basketball team resemble elements of the work environment. Additionally,

the implicit camaraderie of being a team member may place added stress on the individual player to perform at a high level.

2.1 Measuring Flow

There are three methods used to measure flow. Much of Csikszentmihalyi's (1990, 1997) research employed the experience sampling method (ESM). In this method, participants wear a device that randomly signals the participant to complete a diary entry or questionnaire about their activities and feelings at that time. This technique is not well suited to sports participation. A second method is from neuroscience, with measures of electromyographic (EMG) signals as indicators of flow (Cheron, 2016). Again, this method is not appropriate for sports. The third method of measuring flow is through questionnaires (Bakker, 2008; Jackson & Csikszentmihalyi, 1999). Bakker's (2008) WOrk-reLated Flow inventory (WOLF) is focused specifically on work, based on participants reporting their feelings with respect to three major characteristics of flow: absorption, work enjoyment, and intrinsic work motivation. Jackson and Marsh (1996) used an extensive questionnaire across the nine dimensions of flow described in their paper: a balance of challenge and skills, merging of action with awareness, clear goals, unambiguous feedback, total concentration on the task, sense of control, loss of self-consciousness, transformation of time, and autotelic (intrinsically motivated) experience.

3. Research Questions

1. How is the flow state experienced by female basketball players in Canadian universities?
2. Do female athletes experience the flow state differently across the nine factors that characterize flow?
3. What can be done to support athletes in their quest for flow experiences?

4. Methodology and Method

This paper utilizes a case study approach (Gerring, 2007; Yin, 2009), with the unit of analysis being eight Canadian university women's basketball players. Both qualitative and quantitative data were collected for each player.

Fifty-two questionnaires were sent to all head coaches of Canadian university women's basketball teams. They were asked to forward a survey link to their players. The players completed anonymous surveys using SurveyMonkey. Participation was voluntary, and no data were disclosed to coaches or other participants. The surveys contained both qualitative and quantitative questions. Respondents were asked to describe in writing an experience that they felt resulted in a flow state (Appendix A). They were then asked to respond to 36 Likert-scale questions reflecting the nine dimensions of flow (Appendix B). Each response was coded using a scale of 1=strongly agree to 5=strongly disagree; therefore, low numbers indicated strong agreement with a

statement. The written responses were analyzed using content analysis (Krippendorff, 2013). The quantitative responses were analyzed using descriptive statistics. Due to the limited number of cases, it was not possible to compute statistically valid correlations (Bonett & Wright, 2000).

5. Results

Eight players from five Canadian universities responded with sufficient detail to be included in the study. Of the eight players, six responses dealt with flow experienced during games. Surprisingly, all six described situations prior to the players becoming members of university women's basketball teams. It may be that these players have not experienced flow states in their university playing careers or possibly that the situations that they described stood out vividly in their memories as possibly unique experiences of flow. There is also the implication that flow states are relatively rare.

One player (Player G) described a flow experience while working with a basketball shooting machine. This is a solitary experience without outside distractions or interactions with other players. Surprisingly, this player scored the category unambiguous feedback quite low. In shooting a basketball, there is very clear and immediate feedback provided (i.e., the ball went into the hoop or it did not.) In addition, there is extensive biofeedback, identifying the bodily components of a successful shot, or an unsuccessful shot. This would have been especially true when using a shooting machine, as contextual distractions would have been minimized since this is a solitary activity.

Finally, one player described a flow experience in an academic setting with no relationship to basketball. The information provided by this player (Player C) must be considered as an outlier and was given relatively little weight when conducting this analysis. However, this player's narrative does reinforce the research on flow experiences in education (Bakker, 2006, 2009).

Table 1 outlines the responses to the flow scale survey for each player.

Table 1: Player Responses for Flow Scale*

Player	Challenge/ skill balance	Merging action awareness	Clear goals	Clear feedback	Concentration	Paradox of control	Loss of self-consciousness	Time transformation	Autotelic
A	1	1	1	1.25	1.25	1	1	1	1
B	1	1	1.5	3.5	1	1	2	2	1
C	2.5	4.5	3.25	3.25	3.25	2.5	3.5	3.25	2.5
D	1	1	1	1.25	1	1	1	1	1
E	1.25	2.25	1.5	1.5	1	2	3.5	4	1
F	1.25	1	1	1	1	1	1	1	1

G	1.5	1	2.25	3.75	1.5	1.5	1	2.5	1.5
H	1	1.25	1	1.25	1.75	1	1.75	1.75	1.5

Note: *1=strongly agree, 5=strongly disagree

As can be seen in Table 1, most characteristics of flow were rated as very important (excluding Player C, who described an academic flow experience rather than a basketball experience). The characteristic time transformation showed variations in rating. This is consistent with prior research (Jackson & Csikszentmihalyi, 1999; Jackson & Marsh, 1996). Time transformation may or may not occur during experiences of flow, and the transformation may involve time appearing to speed up or alternatively, time appearing to slow down. The coauthor of this paper, in describing flow experiences during her playing career, detailed instances where her opponents appeared to be moving in slow motion, allowing her to easily anticipate and counter their actions on the basketball court. The player narratives were analyzed with respect to the nine primary flow characteristics. Details of this analysis are outlined below. This analysis was conducted on the seven narratives that involved playing basketball.

5.1 A Balance between Challenge and Skills

All seven players commented on this dimension. It was clearly important, reflecting Csikszentmihalyi's flow channel:

> *"We won tip-off, and immediately everything was going the way I wanted it to. I was confident and focused. I saw the floor well, executed many of my shots, and maintained a good spirit."* (Player B)

> *"I felt confident that I could handle the situation."* (Player H)

This balance between challenge and skills was also expressed by players through their comments about lack of stress and feeling relaxed:

> *"Felt composed and wasn't stressed one bit."* (Player E)

> *"Leading up, I wasn't stressed; I was just excited to play some basketball."* (Player A)

These comments indicated that the players were confident in their abilities to meet the challenge.

5.2 The Merging of Action and Awareness

Four players explicitly noted the merging of action and awareness,

> *"Before that, it is like I wasn't really aware fully of my impact or how I was controlling the game."* (Player B)

"I wanted to compete so bad that I had no knowledge of if I as shooting too much or not enough, and really everything was focused on scoring for me." (Player H)

5.3 Goals That Are Clear and Well-defined

There were fewer explicit comments on goals. This may be because, in a game, there is a clear goal of winning. However, players' individual goals may vary depending on their roles:

"My personal goal was to shoot at least 50% from three-point range. I actually hit seven of 11 three-point shots, the best I've ever done in a game." (Player D)

5.4 Immediate and Clear Feedback on Performance

Most players commented on winning the game, while two explicitly described how they were successful in what they had done on the basketball court.

"I made some of the best moves I've e ever made, and I seemed to score with ease." (Player F)

"I was perfect from the foul line, and since I was playing so well, I got fouled a lot." (Player A)

Player G, who described working with the shooting machine, did not comment on her feedback. This was surprising, since the reason to work with a shooting machine is to use biofeedback to modify her shooting to increase success. She may have felt that using feedback was implied when she chose to describe this flow experience.

5.5 Total Concentration on the Task at Hand

Three players spoke of their concentration and focus:

"I had no knowledge of if I as shooting too much or not enough, and really everything was focused on scoring for me." (Player B)

"I was confident and focused." (Player E)

"My face was relaxed, unlike when I'm focusing on something difficult." (Player H)

5.6 A Sense of Control of Oneself, Especially Control of a Difficult Situation

Two players explicitly referenced control:

"You feel completely in control and invincible. Like I can do anything; really powerful, and I am able to lift up my teammates. After, I feel really accomplished and proud." (Player D)

> *"It is like I wasn't really aware fully of my impact or how I was controlling the game."* (Player B)

5.7 Loss of Self-consciousness

This dimension was not explicitly commented on by the players. However, it can be implied from the totality of the narratives, in which the players spoke of dominating the game while not demonstrating feelings of superiority or bragging.

> *"It is like I wasn't really aware fully of my impact or how I was controlling the game."* (Player B)

5.8 Altered Perceptions of Time, Either Speeding up or Slowing Down

This distortion of time was described by two players.

> *"I almost forgot what happened in the game because the time flew by so fast, and everything was happening easily in the sport."* (Player F)

> *"Time flew by, and I felt like I was moving faster than the other team."* (Player H)

Throughout their narratives, the players expressed a high degree of motivation for the task at hand. While none used the terms "autotelic experience" or "intrinsic motivation," their engagement in and enjoyment of the basketball activities was clearly evident in their enthusiastic descriptions of playing basketball, especially in game situations. Their comments on winning games and their personal contributions to those wins were clear evidence of their motivation to succeed.

The players wrote their narratives before completing the flow scale survey. Therefore, they may not have explicitly referenced the nine dimensions of flow. The omission of one or more of the flow characteristics in the players' narratives should not be interpreted as significant or that omitted dimensions were deemed to be unimportant. Without prior knowledge of the language used in the nine dimensions of flow, it would be unsurprising if players failed to use that terminology. A better metric for the importance of the nine dimensions is the results of the flow scale scores.

Computing average scores on each dimension of flow for all players allowed a ranking of the nine dimensions of flow, as shown in Figure 3.

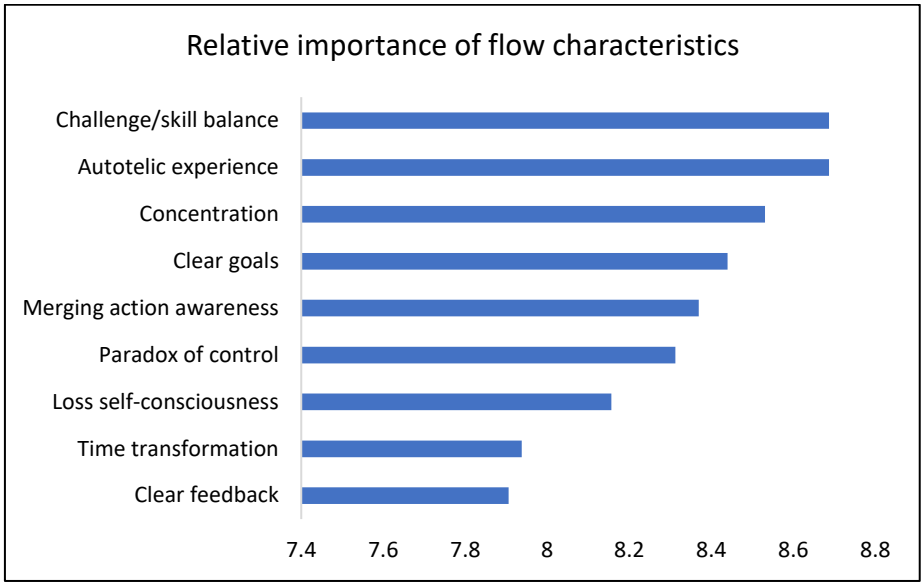

Figure 3: Ranking of the dimensions of flow

As confirmed by other research (Csikszentmihalyi, 1975; Jackson & Csikszentmihalyi 1999; Jackson & Marsh, 1996), the dimensions of challenge/skill balance and autotelic experience (intrinsic motivation) were ranked highest. The low ranking for unambiguous feedback was surprising. In-game situations, feedback is instantaneous and clear since there is a success/failure dichotomy. In the instance of the player working with the shooting machine, feedback is also instantaneous. It appears that only in the case in which a player chose to describe flow in relation to an academic challenge would feedback possibly be delayed.

6. Discussion

Research comparing flow experiences in solitary versus social situations found no differences in the frequency of flow experiences but that solitary situations involved significantly more intense experiences than in social contexts (Liu & Csikszentmihalyi, 2020). This has implications for flow experiences in team sports, which have a social dimension and many social interactions among team members.

The co-author of this paper identified several instances of flow that she experienced during her playing career. However, her descriptions of these flow experiences frequently involved team concepts: making quality passes to open players, securing important rebounds, and having a high number of assists. The respondents in this paper focused on individual accomplishments and rarely mentioned other players or their teams—and those mentions were merely passing comments such as "*we won the game*." The players most often described individual accomplishments, such as "*I scored the most points of my career*" or "*I hit a record number of three-point shots*."

The respondents in this paper were not asked to identify what positions they played. It is possible that flow experiences are position-specific. For example, flow for forwards might involve scoring points; post players might identify securing rebounds or

boxing out; guards might focus on quality passing, bringing the ball upcourt against a press, or breaking a double team. Similarly, flow experiences in other contexts may also be position-specific. Flow experiences for a teacher may involve teaching a quality lesson that connects with students, while flow for the students might mean solving a difficult problem or really understanding a complex topic. This appears to be a fruitful area for future research.

There were a number of characteristics of flow that were revealed through this study. First, flow appears to be a relatively rare occurrence. While all the respondents to this survey were university basketball players in their second to fourth year, all of them described flow experiences that occurred prior to their university careers. One player described "the first time I was 'in the zone'", which clearly stood out in her memory. However, we, as researchers, expected university basketball players, who function at high levels of excellence, to have experienced flow during their university careers. This may have in fact, happened, but since we only asked them to describe a single flow experience, there is no way of determining the frequency of flow experiences that occurred for these players.

A second important result is the fragility of the flow experience and how easily players may lose that experience due to outside interference. Csikszentmihalyi pointed out that using his ESM frequently interrupted the subject's concentration and resulted in the loss of flow (Beard, 2015). One player in this current study described how a timeout during the game resulted in her loss of flow.

> *"When I got to the bench, everyone was yelling and cheering for me; it actually kinda brought me back to reality. Before that it is like I wasn't really aware fully of my impact or how I was controlling the game. After the time out, I was kinda back in my body, and my head took over, and I started to overthink, and it was it. I was out of "the zone" and could not get back into it."* (Player B)

Another player described how, when she was taken out of the game to rest, the encouragement of her teammates actually resulted in her loss of the flow state:

> *"My teammates were cheering and slapping me on the back, talking about how great I was playing. The coach gave me a lot of praise. But when I went back into the game, I didn't play at the same level, and I couldn't seem to bet back in the groove."* (Player H)

There are analogies to other sports. For example, in baseball, a pitcher pitching a perfect game is typically allowed to sit alone in the dugout, and other players stay away from and do not bother the pitcher to avoid interfering with the latter's flow experience. It is not clear how this tradition evolved, but when reflecting on the results of this current study, preserving the fragile flow state appears to be of primary importance.

We also found that the nine dimensions of flow have varied levels of importance for different players. While the challenge/skill balance and intrinsic motivation are very

important to all players, other dimensions, such as the paradox of control or unambiguous feedback, may be less important to some players while still retaining their importance for others. This result differs from previous research (Jackson & Csikszentmihalyi 1999; Jackson & Marsh, 1996), which indicated that only the time transformation dimension varied in occurrence, while the other eight dimensions were consistently important.

This has implications for coaching, since coaches certainly desire to provide conditions that encourage their players to experience flow states. Therefore, it is critical for coaches to understand their players and what motivates their players to excel. Experiencing flow is a very personal event; conditions that might move one player into a flow experience may be very different than conditions required by another player to move into flow. This situation is similar to conditions discussed by Irvine and Kristensen-Irvine (2024) with respect to players' comfort zones and optimal challenge points. Each player is unique and requires unique circumstances to excel.

To encourage and support the occurrence of flow in their players, coaches need to be familiar with the conditions that optimize flow experiences. In a protracted interview in 2011, Csikszentmihalyi outlines the conditions necessary for the occurrence and sustainment of flow (Beard, 2015). First and foremost, the activity must be enjoyable. When Csikszentmihalyi initially began his research into flow, he focused on games and leisure activities since these are voluntary and inherently enjoyable. Therefore, games and practices need to be enjoyable for the participants. This need not be frivolous enjoyment, but enjoyment can result from successfully accomplishing an initially difficult task.

A second condition comes from Csikszentmihalyi's flow channel. Activities need to match challenges with skill levels. So, a highly skilled player needs to be matched against other highly skilled opponents. This promotes high levels of engagement and focus, and therefore, flow is more likely to occur. In these situations, the player will experience a significant level of arousal (Yerkes, 1907) and a sufficient level of stress to raise their concentration and focus (Stuberg & Magness, 2017).

Activities with clear goals also contribute to flow experiences. In games, there are clear goals (i.e., winning the game). However, Csikszentmihalyi points out that the goals need to have implications for players' personal well-being. This might involve recognition from teammates, intrinsic satisfaction with the level of play, or personal goals such as a particular level of scoring, number of assists, number of rebounds, and so on.

Removal of external distractions may also play a role. Games tend to have abundant distractions involving audience noise, opponent taunting, coaches shouting instructions, and officials making rulings. Coaches can minimize some of these distractions that are under their control but can also focus on making practices game situational. Bringing audiences to practices or electronically producing crowd noise during practices will help players learn to tune out these distractions and promote optimal flow conditions.

7. Conclusions and Areas for Future Research

Flow is a personal psychological state; however, in the context of team sports, it is useful to know if flow can be contagious—that is, can a player in a flow state influence her teammates to also enter flow states? For example, a basketball guard in a state of flow may focus on giving quality passes to her open teammate. That teammate, in turn, will have high-quality opportunities to score. Those opportunities may induce a flow state in the teammate. Might this result in a snowball effect that pushes an entire team into flow states? Clearly, if this is possible, it would be a highly valuable situation for the team. This is an area that has not so far been examined through research and thus is a useful addition to the literature.

In another area, it was noted that the player narratives in this study sometimes omitted explicit references to some dimensions of flow, such as intrinsic motivation. This study asked respondents to describe an incident of flow in narrative form. This was followed by the completion of a questionnaire on the nine characteristics of flow. It would be informative to compare the responses in this study to another study in which respondents completed the Likert questionnaire first, followed by written narratives about incidents of flow. Might the narratives then be more fulsome regarding the nine characteristics of flow? Alternatively, might the narratives be so influenced by the questionnaire responses that players embellished or even fabricated their narrative responses to reflect the characteristics described in the questionnaire? This is a question that could (and possibly should) be investigated further.

8. Limitations

Surveys and questionnaires are very applicable to sports participants but have two limitations: (a) participants' retrospective recollection of past events may result in inaccurate data, and (b) attempts to describe emotional or affective information using quantitative methods rather than qualitative methods may too skew results (Jackson & Marsh, 1996). To help reduce these limitations, our research used a case study approach, with the Jackson and Marsh (1996) questionnaire administered after players had described in writing a flow experience. This combination of quantitative and qualitative data allowed a more fulsome portrait of the flow experience for women's basketball players.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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References

Bakker A, 2005. Flow among music teachers and their students: The crossover of peak experience. Journal of Vocational Behavior 66: 26-44. https://doi.org/10.1016/j.jvb.2003.11.001

Bakker A, 2008. The work-related flow inventory: Construction and initial validation of the WOLF. Journal of Vocational Behavior 72(3): 400-414. https://doi.org/10.1016/j.jvb.2007.11.007

Bassi M, Delle Fave A, 2012. Optimal experience among teachers: New insights into the work paradox. The Journal of Psychology 146(5): 533-557. https://doi.org/10.1080/00223980.2012.656156

Beard K, 2015. Theoretically speaking: An interview with Mihaly Csikszentmihalyi on flow theory development and its usefulness in addressing contemporary challenges in education. Educational Psychology Review 27: 353-364. https://doi.org/10.1007/s10648-014-9291-1

Bonett D, Wright T. 2000. Sample size requirements for estimating ¨Pearson, Kendall and Spearman correlations. Psychometrika 65(1): 23-28. https://doi.org/10.1007/BF02294183

Caniëls MCJ, Adamska KM, van Oortmerssen LA, van Assen M, 2021. Set your mind on it: The mediating role of mindset in the relationship between a learning-from-error climate and work-related flow. Current Psychology 42: 2067-2076. https://doi.org/10.1007/s12144-021-01572-3

Cheron G, 2016. How to measure the psychological "flow"? A neuroscience perspective. Frontiers in Psychology 7: 1823. https://doi.org/10.3389/fpsyg.2016.01823

Csikszentmihalyi M, 1975. Beyond Boredom and Anxiety: Experiencing Flow in Work and Play. Hoboken, NJ, USA: Jossey-Bass. Retrieved from https://www.wiley.com/en-us/Beyond+Boredom+and+Anxiety%3A+Experiencing+Flow+in+Work+and+Play%2C+25th+Anniversary+Edition-p-9780787951405

Csikszentmihalyi M, 1990. Flow: The Psychology of Optimal Experience. New York, NY, USA: Harper & Row. Retrieved from https://www.researchgate.net/publication/224927532_Flow_The_Psychology_of_Optimal_Experience

Csikszentmihalyi M, 1997. Finding Flow. New York, NY, USA: Basic Books. Retrieved from https://psycnet.apa.org/record/1997-08434-000

Csikszentmihalyi M, 2000. Happiness, flow, and economic equality. American Psychologist 55(10): 1163-1164. https://doi.org/10.1037/0003-066X.55.10.1163

Demerouti E, 2006. Job characteristics, flow, and performance: The moderating role of conscientiousness. Journal of Occupational Health Psychology 11(3): 266-280. https://doi.org/10.1037/1076-8998.11.3.266

Eisenberger R, Jones J, Stinglhamber F, Shanock L, Randall A, 2005. Flow experiences at work: For high need achievers alone? Journal of Organizational Behavior 26: 755-775. https://doi.org/10.1002/job.337

Gerring J, 2007. Case Study Research: Principles and Practices. New York, NY, USA: Cambridge University Press. Retrieved from https://books.google.ro/books/about/Case_Study_Research.html?id=xECY0nnkTvMC&redir_esc=y

Irvine J, Kristensen-Irvine K, 2024. Comfort zones and optimal challenge points: Perspectives from Canadian university women's basketball coaches. European Journal of Physical Education and Sport Science 11(2): 22-38. http://doi.org/10.46827/ejpe.v11i2.5404

Jackson S, Csikszentmihalyi M, 1999. Flow in Sports: The Keys to Optimal Experiences and Performances. Champaign, IL, USA: Human Kinetics. Retrieved from https://books.google.ro/books/about/Flow_in_Sports.html?id=Jak4A8rEZawC&redir_esc=y

Jackson S, Marsh H, 1996. Development and validation of a scale to measure optimal experience: The flow state scale. Journal of Sport and Exercise Psychology 18(1): 17-35. https://doi.org/10.1123/jsep.18.1.17

Krippendorff K, (2013. Content Analysis. An Introduction to Its Methodology, 3rd edn. Thousand Oaks, CA, USA: SAGE. Retrieved from https://methods.sagepub.com/book/mono/content-analysis-4e/toc

Liu T, Csikszentmihalyi M, 2020. Flow among introverts and extroverts in solitary and social activities. Personality and Individual Differences 167: 10197. https://doi.org/10.1016/j.paid.2020.110197

Locke A, 2008. Managing agency for athletic performance: A discursive approach to the Zone. Qualitative Research in Psychology 5: 103-126. https://doi.org/10.1080/14780880701672414

Salanova M, Bakker A, Llorens S, 2006. Flow at work: Evidence for an upward spiral of personal and organizational resources. Journal of Happiness Studies 7: 1-22. https://doi.org/10.1007/s10902-005-8854-8

Stuberg B, Magness S, 2017. Peak Performance. Emmaus, PA, USA: Rodale Wellness Press. Retrieved from https://books.google.ro/books/about/Peak_Performance.html?id=i6KkDQAAQBAJ&redir_esc=y

Teddlie C, Tashakkori A, 2009. Foundations of Mixed Methods Research. Thousand Oaks, CA, USA: SAGE. Retrieved from https://uk.sagepub.com/en-gb/eur/foundations-of-mixed-methods-research/book252072

Vrooman K, Finley K, Nakamura J, Csikszentmihalyi M, 2022. Flow in the arts and humanities: On cultivating human complexity. In: Tay L, Pawelski JO, eds. The Oxford Handbook of the Positive Humanities. Oxford Academic, pp. 210-221. https://doi.org/10.1093/oxfordhb/9780190064570.013.15

Yerkes R, 1907. The Dancing Mouse: A Study in Animal Behavior. New York, NY, USA: Macmillan. Retrieved from https://ia904709.us.archive.org/2/items/dancingmousestud00yerk/dancingmousestud00yerk.pdf

Yin R, 2009. Case Study Research: Design and Methods, 4th edn. Thousand Oaks, CA, USA: SAGE. Retrieved from http://dx.doi.org/10.3138/cjpe.30.1.108

Young J, Pain M, 1999. The zone: Evidence of a universal phenomenon for athletes across sports. Athletic Insight: The Online Journal of Sport Psychology 1(3): 21-30. Retrieved from https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=7c7d60e105c94062c11757990a8663dbc867b827

Appendix A: Prompt for Describing a Flow Experience

Think of a time when you were totally involved in what you were doing (sometimes called "in the zone")—a time when you felt strong and positive, not worried about yourself or about failing. Describe the situation as fully as possible: when and where it occurred, who you were with, what was happening leading up to the time, and how the experience started. As you recall your experience, use as many senses as you can to imagine the event. Jot down thoughts, feelings, and impressions of the experience, including how you felt when it finished.

Appendix B: The Flow Scale

Please answer the following questions in relation to your experience in the event you have just described. These questions relate to the thoughts and feelings you may have experienced during the event. There are no right or wrong answers. Think about how you felt during the event and select the best answer for you for each question.

1. I was challenged, but I believed my skills would allow me to meet the challenge.
2. I made the correct movements without thinking about trying to do so.
3. I knew clearly what I wanted to do.
4. It was really clear to me that I was doing well.
5. My attention was focused entirely on what I was doing.
6. I felt in total control of what I was doing.
7. I was not concerned with what others may have been thinking of me.
8. Time seemed to alter (either slowed down or speeded up).
9. I really enjoyed the experience.
10. My abilities matched the high challenge of the situation.
11. Things just seemed to be happening automatically.
12. I had a strong sense of what I wanted to do.
13. I was aware of how well I was performing.
14. It was no effort to keep my mind on what was happening.
15. I felt like I could control what I was doing.
16. I was not worried about my performance during the event.
17. The way time passed seemed to be different from normal.
18. I loved the feeling of that performance and want to capture it again.
19. I felt I was competent enough to meet the high demands of the situation.
20. I performed automatically.
21. I knew what I wanted to achieve.
22. I had a good idea while I was performing about how well I was doing.
23. I had total concentration.
24. I had a feeling of total control.
25. I was not concerned with how I was presenting myself.
26. It felt like time had stopped while I was performing.
27. The experience left me feeling great.
28. The challenge and my skills were at an equally high level.

29. I did things spontaneously and automatically without having to think.
30. My goals were clear to me.
31. I could tell by the way I was performing how well I was doing.
32. I was completely focused on the task at hand.
33. I felt in total control of my body.
34. I was not worried about what others may have been thinking of me.
35. At times, it almost seemed like things were happening in slow motion.
36. I found the experience extremely rewarding.

- Challenge/skill balance: 1, 10, 19, 28
- Action-awareness merging: 2, 11, 20, 29
- Clear goals: 3, 12, 21, 30
- Unambiguous feedback: 4, 13, 22, 31
- Concentration on the task at hand: 5, 14, 23, 32
- Paradox of control: 6, 15, 24, 33
- Loss of self-consciousness: 7, 16, 25, 34
- Transformation of time: 8, 17, 26, 35
- Autotelic experience: 9, 18, 27, 36