

Growing snow volleyball in snow-restricted countries: A pilot study

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ABSTRACT

Snow volleyball is an increasingly popular sport that has been earmarked as a potential Winter Olympic discipline. However, it is not typically associated with Africa. This study provided an in-depth retrospective exploration of the experience of an African player who participated in the inaugural Snow Volleyball World Championships in 2019. Through a focused one-on-one interview, the study examined her transition to snow volleyball, the challenges she faced, and her insights into the feasibility of African participation in the sport. Drawing from both her tournament experience and her broader knowledge of the volleyball landscape, she identified key barriers such as climate, accessibility, and financial constraints, while also proposing strategies to improve feasibility. These include leveraging African players competing in European leagues, developing training opportunities in North Africa, and exploring artificial snow environments. While the study primarily focuses on the player's personal journey, it also highlights pathways for the sport's potential expansion in non-snow countries. This qualitative study serves as a pilot for a larger investigation into the introduction of snow volleyball to regions without winter sports traditions.

KEYWORDS

Climate; Training; Snow; Coaching; Sport Innovation

1. INTRODUCTION

The Olympism365 strategy, endorsed by the International Olympic Committee (IOC) in 2021, emphasizes improving access to sport in underserved communities, recognizing it as one of the four key areas of change (IOC, 2021). Expanding access to sports, including opportunities to participate in prestigious events like the Winter Games, not only enhances opportunities for athletes but also promotes inclusive employment within sport, aligning with another important area of change

identified by the IOC (IOC, 2021). A core element of the Olympic Games is international representation; however, the Winter Olympics do not exhibit internationality to the same extent as the Summer Games. Success in the Winter Games remains largely confined to industrialized nations in the Northern Hemisphere, particularly in Europe and North America, with Africa remaining entirely excluded and Oceania barely represented. Occasionally, athletes from non-traditional winter sports nations appear, but they are often perceived as "exotic participants," frequently ridiculed to varying degrees (Martínkova & Parry, 2020). For many countries from the Global South, the Winter Olympics are viewed as a platform for international recognition rather than serious competition. Media portrayals of these athletes as "tourists" rather than legitimate competitors further reinforce stereotypes and undermine their credibility (Fabian, 2020).

Increasing the exposure of winter sports in countries not traditionally represented in the Winter Games is crucial for diversifying the talent pool, fostering inclusivity, and ensuring the long-term growth and global relevance of winter sports. Athletes like Erin Jackson, the first Black woman to win a speedskating gold medal, and Elana Meyers Taylor, a bobsledder from Georgia, highlight the untapped potential in non-traditional regions (Axon, 2024). Despite this potential, structural barriers such as limited exposure, high costs, inadequate training infrastructure, and geographic constraints impede sustained participation. Initiatives like USA Luge's Slider Search, U.S. Ski & Snowboard's recruitment of gymnasts and endurance athletes, and innovations such as the standardized monobob sled have made winter sports more accessible to countries like Nigeria, Thailand, and Vietnam (Axon, 2024). These efforts demonstrate how transferable skills and creative recruitment programs can bridge gaps and expand opportunities for non-traditional nations. Furthermore, flexible citizenship policies and the involvement of diaspora athletes have increased participation, although this has raised questions about national representation and equity. For example, athletes from the Global North who struggle to qualify for their home countries may compete for nations in the Global South, blurring the lines of national identity (Fabian, 2020). Although governing bodies have tightened qualification standards, making it more challenging for developing nations to compete, strategies such as investing in artificial training environments and scouting talent in the Global South could enhance participation and competitiveness.

A key goal of the Olympic Movement is to promote inclusion by offering an Olympic program that encompasses a wide array of sports, disciplines, and events, thereby maximizing inclusivity (Martínkova & Parry, 2020). Expanding access to winter sports through innovative models, such as recruiting athletes from other sports like snow volleyball, can further promote

inclusivity, even for athletes from warmer climates. Although this would require support to facilitate the transition, it could open new pathways for participation. The migration model seen in football, where African players develop their skills in colder climates while still representing their home countries, could be adapted for winter sports (Fabian, 2020). This approach would not only diversify the talent pool but also foster cultural exchange and inclusivity, ensuring the long-term sustainability and global appeal of winter sports as traditional talent sources diminish.

By addressing these barriers and embracing innovative strategies, winter sports can unlock the potential of underrepresented regions, fostering a more equitable, dynamic, and globally representative sporting landscape. The integration of athletes from the Global South, alongside targeted recruitment, infrastructure development, and positive media representation, has the potential to transform the Winter Olympics into a truly inclusive and globally representative event (Axon, 2024; Fabian, 2020).

Snow volleyball, the newest discipline recognized by the International Volleyball Federation (FIVB), has quickly evolved from a recreational activity to a structured competitive sport. Developed in 2008 by Martin Kaswurm in Austria, snow volleyball shares similarities with beach volleyball but is adapted for snowy conditions. Players wear warm clothing and often use football cleats for better grip, with official matches requiring snow depths of at least 30 cm (FIVB, 2019, 2021). The sport underwent significant rule changes in the 2018/2019 season, transitioning from two to three players per team with one substitute and adopting a best-of-three sets format, with each set played to 15 points (FIVB, 2019).

The sport gained global recognition with the inaugural 2019 World Snow Volleyball Tour in Austria and Italy, marking its competitive debut. Since then, the FIVB has organized annual events for both men's and women's teams, with the 2018/2019 season featuring three events, and the 2019/2020 season aiming for at least five World Tour events (Ştirbu & Ştirbu, 2021). The introduction of an official World Ranking system in the 2018/2019 season further solidified the sport's competitive structure (Ştirbu & Ştirbu, 2021). Snow volleyball has attracted significant media attention, reaching an international online audience of 870 million, a social media reach of 26 million, and an advertising value of 13.7 million EUR, drawing 20,000 spectators (Ştirbu & Ştirbu, 2021).

The sport's novelty has been a key factor in its appeal, attracting players both from within the volleyball community and beyond (Noguchi et al., 2024). Despite its rapid growth and potential

inclusion in future Winter Olympics, snow volleyball remains under-researched (Noguchi et al., 2024). Austria was the first country to recognize snow volleyball as an official discipline, and the FIVB and European Volleyball Confederation (CEV) have actively promoted its growth. Countries like Japan and Türkiye have incorporated snow volleyball into their volleyball programs, with Türkiye aiming to become a pioneer in the sport (Noguchi et al., 2024). However, these countries contain regions with regular snowfall, so their context cannot be directly compared to countries that do not have typical winter weather.

The FIVB has ambitious plans for snow volleyball, including its potential inclusion in the Winter Olympics, mirroring the trajectory of beach volleyball in the early 1990s (Nelson, 2017). The sport is also under consideration for the 2025 International University Sports Federation (FISU) Winter World University Games in Turin (Berkley, 2023). The first official European tour took place in 2016, and the inaugural World Championships were held in 2019, featuring teams from non-traditional winter sports countries like South Africa and Cameroon (CEV, 2019). This marked the first global exposure to snow volleyball for players from these regions.

African participation in winter sports has historically been limited due to climatic conditions. For instance, only eight African countries participated in the 2018 Winter Olympics in South Korea, the highest representation for the continent at the time (Rademeyer, 2020). By 2022, only 15 African countries had ever participated in the Winter Olympics, with just seven competing more than once (Reuters, 2022). The inclusion of South Africa and Cameroon in the 2019 Snow Volleyball World Championships provided a unique opportunity for African players to engage with the sport. This study explores the experiences and perceptions of a South African player who participated in the championships, examining her views on the feasibility of snow volleyball as a sport accessible to African athletes.

In summary, snow volleyball has evolved from a recreational activity into a globally recognized competitive sport with significant media attention. Its potential inclusion in the Winter Olympics and its appeal to players from diverse regions highlight its growing popularity. However, further research is needed to fully understand its development and feasibility, particularly in non-traditional winter sports regions like Africa. This study retrospectively explores the experiences of an African player who competed in the Snow Volleyball World Championships, while also examining her beliefs regarding the feasibility of snow volleyball being open to African participation.

2. METHODS

This study retrospectively explored the experiences of an African player who competed in the Snow Volleyball World Championships, while also examining her beliefs regarding the feasibility of snow volleyball being open to African participation. It employed a qualitative exploratory approach, using a semi-structured, open-ended interview with a single African volleyball player who had participated in a snow volleyball competition. While the reliance on a single participant is a limitation, this was due to the highly restricted pool of eligible individuals, as only eight African volleyball players had ever competed in snow volleyball, and only one consented to participate. Despite this constraint, the study provides valuable initial insights into the experiences of African athletes in this emerging sport.

The open-ended interview allowed the researchers to identify both the potential and challenges of growing snow volleyball on the African continent while also exploring the experiences of a player in their initial exposure to Snow Volleyball. The key areas focused on during the interview were the transition from other volleyball codes to snow volleyball and the challenges and recommendations for creating continuity within Africa. Since only a single interview was conducted, a content analysis was used to analyse the interview.

3. RESULTS AND DISCUSSION

The interview indicated that there was little to no knowledge of the sport prior to the invitation to the inaugural event but indicated that overall, it was a positive experience. The teams were provided with some pre-tournament training which assisted with transitioning from other volleyball codes to snow volleyball, however, adjusting to the moisture was the hardest task. With this being a once-off event, the interviewee indicated that it provides a lack of continuity therefore there are no additional opportunities to develop. Table 1 summarizes the key content related to the transition from other volleyball codes and the challenges and opportunities for growth of the sport in Africa.

	<p>Teams may miss opportunities due to financial limitations.</p> <hr/> <p>Environmental conditions: Need to train in the conditions to perform well in the conditions</p> <p>Continuity is crucial for skill development.</p> <p>People from countries without snow might not enjoy competing in such cold conditions</p>	<p>beaches and we can train. Practically we can perform better.”</p> <hr/> <p>“The problem is that we don’t have the level of snow fall anywhere close to us. So, in terms of training and being competitive, it becomes an issue. If you would like to participate it would be something where you have to go to a country where there is snow for a while before the competition starts. You can practice the movement, the team dynamics, but the actual snow- you need to be somewhere where it’s snowing and that becomes really expensive because the currency is not that strong, and it would be difficult to have continuity”</p>
Opportunities	<p>Creating Teams from Specific Regions: Forming teams from summery countries (with players in European club volleyball).</p> <p>Starting with North African teams (proximity to snowy conditions).</p> <p>The goal is to facilitate hosting camps and training.</p> <hr/> <p>Exploring Snow Conditions African countries: Analyzing natural snow conditions in Africa.</p> <p>Investigating the viability of man-made snow for snow sports.</p> <p>Simulators or e-gaming may help with preparation but not the reality of cold temperatures.</p> <hr/> <p>Targeting Expat Communities: Introducing snow volleyball to expat communities from relevant countries</p> <p>Involving their children to create teams.</p>	<p>“For SA it is really difficult to travel. Maybe North Africa would be more practical and less expensive. For Cameroon, a lot of their players train and play in France which would make it not completely impossible.”</p> <hr/> <p>“In SA, we have Lesotho [close by], but is there enough snowfall and would courts be able to be built? Looking at possible infrastructure. Once the bug bites then countries might invest but hard to start when nothing close by.”</p> <hr/> <p>“Targeting expat communities from these countries and introducing them and their children to the sport can help create teams from these countries.”</p>

Snow volleyball shares some similarities with other forms of volleyball, but it is most closely related to beach volleyball. Both share the same court size and feature teams of either two or three players. One key difference between snow volleyball and beach volleyball is the scoring system: in snow volleyball, matches are played to 15 points for two-set matches and 11 points for three-set matches, as opposed to 21 and 15 points, respectively, in beach volleyball (Senel & Cevahircioğlu, 2022). Initially, a beach volleyball was used, but starting in the 2018/2019 season, a ball adapted for snowy conditions was introduced. This new ball retains the softer and larger characteristics of a beach volleyball compared to an indoor volleyball (CEV, n.d.)

The potential for players to transition successfully from other volleyball formats to snow volleyball has been demonstrated in countries like Türkiye, where the most accomplished snow volleyball athletes often have backgrounds in indoor and beach volleyball (Senel & Cevahircioğlu, 2022). The reasons behind this trend have not been thoroughly explored, but it may be attributed to the similarities between the different volleyball formats, as well as the athletes' experience in handling competition-related expectations and pressures. Players with beach volleyball experience often note that the overall feeling of the two codes is similar, making the transition feel less like starting a completely new sport (Noguchi et al., 2024).

While the gameplay is similar, the most significant changes involve weather conditions and appropriate clothing. Like any outdoor sport, snow volleyball is heavily influenced by the weather, which can impact visibility and ice safety (Noguchi et al., 2024). The best way to prepare for various snowy conditions is through exposure during training. However, limited access to snow often poses a challenge. Some athletes use alternative training methods; for instance, sand has been employed by some Winter Olympians to practice for their sports.

Similarly, the case of Australian athlete Beth Slade underscores the importance of opportunity and accessibility in elite sports participation. Slade was introduced to luge through a chance meeting with two-time Winter Olympian Hannah Campbell-Pegg, illustrating that external opportunities can be as influential as an individual's determination. In preparation for the Lillehammer 2016 Youth Olympic Games, Slade spent at least four months training in Europe, further reinforcing Adeagbo's argument about the significance of accessibility in athletic development (ABC News, 2016).

Tongan athlete Pita Taufatofua, who transitioned from taekwondo to cross-country skiing, demonstrated the adaptability and resourcefulness required in sports with limited access to specialized training facilities. Taufatofua initially trained on sand dunes, using wooden planks

strapped to his feet to simulate skiing conditions (Olympics.com, n.d.). Similarly, Moroccan cross-country skier Samir Azzimani also trained in sand dunes while utilizing roller skis on the streets (Sanahori, 2018). Their unconventional training approaches highlight the challenges faced by athletes from regions without established infrastructure for winter sports and underscore the importance of innovation in overcoming geographical and environmental barriers. There is no research supporting the use of sand as a training surface for snow athletes, despite the potential similarities between sand and snow, such as challenges to proprioception and visibility issues in adverse conditions. Thus, studies on the crossover effects of training on these surfaces are lacking.

Accessibility to training facilities plays a crucial role in developing athletes. Simidele Adeagbo, who made history as the first African athlete to compete in skeleton at the PyeongChang 2018 Winter Olympics and later became the first African to win an international bobsled race at the 2022 EuroCup in Germany, emphasizes that adequate access to training resources means "the possibilities are limitless." She advocates for a step-by-step approach in which aspiring athletes systematically overcome barriers to access necessary facilities (Watta, 2022).

Trying out a sport once is a novelty, but sustainable results require increased and consistent exposure. The interviewee suggested that the experience of playing the sport was great but with a lack of continuity or follow-up exposure, it does feel like just a once-off experience. The belief is that exhibitions, presentations, and general marketing around the sport will be beneficial to creating curiosity in the initial phases of growth. There is an opinion that there is potential for interest. A more targeted approach through training camps with trained coaches in the local areas known for snow, the introduction of the sport within such places as recreational activities. Sub-Saharan Africa currently has one ski resort. Afriski in the Lesotho Highlands could be investigated for the introduction of snow volleyball in the region (Hoogendoorn et al., 2021). Afriski offers other winter sports like snowboarding and skiing (Hoogendoorn et al., 2021; Noome & Fitchett, 2019). Tiffendell Ski Resort in the Drakensberg region of South Africa received government financial support to run an academy introducing South Africans to Winter Sports. Most South African national skiers have come through the program at the Academy. However, the resort is not currently operational following Covid-19 restrictions (Tianra, 2021). Climate change has resulted in increasing temperatures and can have an impact on the functioning of natural ski resorts like Afriski (Hoogendoorn et al., 2021; Noome & Fitchett, 2019).

Alternatively, the use of man-made snow facilities and/or simulators will be beneficial for the athlete's development in the sport. We are seeing more exposure to winter activities in countries that

don't have large snow exposure. The use of artificial snow enables business opportunities centered around snow-related activities (Hofmann, 2012). Saudi Arabia will be hosting the 2029 Asian Winter Games and has started work successfully on creating artificial snow in the Sarwat Mountains. NEOM the developers for the Ski-village have promised sustainable and environmentally friendly construction and running of the ski resort (Bell, 2023). Even in countries known for their ski resorts, artificial snow has become a prerequisite for cross-country skiing. The interest and growth of indoor skiing is also growing thus ensuring more research and development into artificial snow. However, the environmental and economic costs associated with this can be high (Svensson et al., 2023).

With limited options and access to snowy conditions in Africa, another possible place to start introducing the sport to the African continent is by targeting volleyball players from other volleyball disciplines who are playing club volleyball in Europe. This would create more financially viable options for them to be exposed to the sport. Across many sporting codes, global migration in search of more sports opportunities has become common (Agergaard et al., 2013; Storey, 2011). Most migration trends research particularly focused on African sports migration is based on football data (Agergaard & Botelho, 2014; Darby & Solberg, 2010). Data on the migration of African volleyball players is lacking. However, countries like Cameroon have a large number of players based in France. Having African players playing in countries with closer proximity to high snow conditions is an opportunity to expose African players to snow volleyball.

Volleyball is also popular in the North African countries. This could be used as a foundation to build interest in the region. North African countries are geographically close to Europe and are well-connected to the French and Swiss Alps. Costs to hold training camps will be cheaper than for countries from East, West and South Africa. Thus, a concentrated effort on countries in the North of the continent might be effective for recruitment and increased exposure to the discipline.

Introducing the sport to African expat communities within countries with a lot of snow could also be a viable option and could help gain exposure to the sport. In sports like football, players can often choose to play for the country of their parents. In the 2014 and 2018 FIFA World Cups 85 and 84 out of 736 footballers respectively represented a country other than the country of their birth (Van Campenhout et al., 2018; van Campenhout & van Houtum, 2021). While this is not as prevalent in volleyball, it is an opportunity for winter sports like snow volleyball to get national players for countries not usually active in the Winter Games. Representation and having a national team consistently involved will increase exposure to the sport in different countries will automatically increase exposure in different countries and can be effective in achieving continuity within the sport.

4. CONCLUSIONS

This study examined the potential for developing snow volleyball in countries with limited snowfall, with a particular focus on Africa. Through a retrospective interview with an African player who participated in the 2019 Snow Volleyball World Championships, the research identified both challenges and opportunities for the growth of the sport in non-traditional winter sports nations.

The findings highlight several key challenges, including environmental factors such as cold temperatures and altitude, the transition from other forms of volleyball, and financial constraints that limit access to training and competition. Despite these obstacles, there is significant interest in snow volleyball, suggesting that with adequate support, infrastructure development, and targeted initiatives, the sport has the potential to flourish in countries that do not traditionally engage in winter sports.

Opportunities for expanding snow volleyball include leveraging the experience of African players competing in European leagues, establishing training camps in North African countries that are closer to snowy regions, and exploring the feasibility of using artificial snow or simulators for training. Additionally, introducing the sport to expatriate communities and their children could help create teams and increase long-term participation.

Overall, snow volleyball presents a unique opportunity for growth in non-winter sports countries. With strategic efforts in athlete recruitment, training infrastructure, and promotion, it could become both a competitive and recreational option in areas with ski resorts or artificial snow facilities. Further research is needed to broaden the geographic scope beyond Africa and explore practical measures for implementing snow volleyball in other regions with limited snowfall. By addressing these factors, snow volleyball could establish itself as a viable and inclusive global sport.

5. FUTURE RESEARCH

Snow volleyball is an emerging sport with unique environmental challenges that influence performance, injury risk, and tactical adaptations. Despite its growing popularity, research in this area remains limited. While this study provides valuable insights, its qualitative approach and limited participant pool highlight the need for further research. Future studies should expand the geographic scope beyond Africa, incorporate quantitative methods such as surveys and secondary data analysis, and engage more players and sports federation representatives to validate and build upon these findings to optimise athlete performance and safety while enhancing the sport's global reach, future studies should focus on key areas such as the development of training environments.

The feasibility of artificial snow training environments is another vital research avenue, particularly for expanding the sport to regions with limited natural snowfall. Investigations should assess the physiological and biomechanical differences between training on artificial versus natural snow, examining how athletes adapt their movement patterns and energy expenditure. Comparative studies on alternative surfaces, such as synthetic snow or modified sand, could provide insights into their effectiveness in simulating actual snow conditions. Furthermore, optimising equipment for artificial environments, including footwear, protective gear, and clothing, could help athletes transition more effectively between different playing surfaces while minimising the risk of injury.

To facilitate the global expansion of snow volleyball, research should evaluate the current level of awareness and perception of the sport in non-traditional regions. While this study explored the experiences and opinions of someone who had experienced a Snow Volleyball competition, it would be important for sustainability, understanding the views of people from within other volleyball disciplines who have never been invited to a snow volleyball competition is important. Studies should analyse knowledge dissemination and identify key barriers to participation. Pilot programs using artificial snow or other modified surfaces could be introduced to assess interest, engagement, and skill acquisition in these new regions. Furthermore, research into effective marketing and development strategies, including financial models, event organisation, and sponsorship opportunities, would provide valuable guidance for governing bodies seeking to promote snow volleyball internationally.

As snow volleyball continues to evolve, interdisciplinary research is necessary to address performance, injury prevention, and sport development challenges. Establishing artificial snow training environments, enhancing injury surveillance, and expanding global participation through targeted pilot programs will be essential for the sport's future growth. Collaborative efforts among researchers, sports organisations, and governing bodies will be crucial in translating findings into practice, ensuring the long-term success of snow volleyball as a competitive discipline.

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AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

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