

## Comparing the practices of USA skiing and snowboarding against a global model for integrated development of mass and high-performance sport

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### Abstract

**Problem Statement:** The paper examines the current state of skiing and snowboarding in the USA against a model for developing high performance sport integrated with mass participation. The model stresses interconnections among the levels, such as macro-level policies used to impact healthy sport behaviors through regulations of advertising and marketing, school provisions, retail offerings, and taxes and levies, which directly and indirectly influence sport development at meso- and micro-levels. When the performance and health of athletes and masses of general population are advanced in integration, this ultimately helps reach goals of many supporting agencies and contribute to macro-level socio-economic success. **Approach:** We developed a questionnaire to examine the following elements of the model: talent development; advanced athlete support; training centers; competitions; intellectual services; partnerships with supporting agencies; balanced and integrated funding and structures of mass and elite sport. Survey questions were validated by 12 international experts including executives from sport governing bodies, coaches, academicians, and administrators. To determine the areas for improvement, 102 coaches completed the questionnaire. Possible advancements were further identified through semi-structured discussions with 10 skiing and snowboarding administrators. **Purpose:** This study investigated the integrated sport development from recreation to high performance at macro, meso, and micro levels of support and policy on the example of the United States Ski and Snowboard Association. Macro level elements refer in this study to socio-economic, cultural, legislative, and organizational support for a national sport system by the whole society. The meso level includes infrastructures, personnel, and services enabling delivery of sport policy. The micro level consists of operations, processes, and methodologies for development of individual athletes. **Results and Conclusions:** The sport system components overlap at different levels, therefore they create opportunities for a holistic system of sport development where high performance programs are integrated with mass participation provisions. Results suggest possible enhancements at macro level (e.g., new partnerships and incentives for greater support of mass participation), meso level (e.g., additional sources and models for better coach education and facilities), and micro level (e.g., advanced lifelong guidelines for excellence of everyone) on the example of USSA. It is important to use this holistic approach in further research on the integrated development of mass and high-performance sport.

**Key Words:** Skiing and snowboarding, USA, high performance, mass participation, sport development.

### Introduction

The United States Ski and Snowboard Association (USSA) contributed more than any other US National Governing Body (NGB) to the number of medals this country won in all Winter Olympics (305 medals) competition. The USA is the second most successful country in Olympic skiing and snowboarding by total medal count, after Norway. Since skiing was introduced in the Winter Olympics in 1924, the Team USA has on average won 10% of available skiing and snowboarding medals (Statista, 2019).

Similar to overall sport participation in the US, the number of skiers has been decreasing in the past 30 years, as the following data by NSGA (2016). While alpine skiing participation remains greater (six million) than cross country participation (two million), alpine skiing has had a noticeable 40% decrease since the mid 90's. Cross country skiing has also been decreasing since the late 1980's, becoming stagnant since 2015 at around 2.5 million participants (NSGA, 2016). Participation of alpine and cross-country skiing is not increasing despite the population growth: millions more could be attracted to these sports for many health and socio-economic benefits.

Addressing the dual goal of any Olympic sport, building the participation base while achieving competitive success, this study examines the current state of US skiing and snowboarding against an ideal-type global model for high performance (HP) sport development that integrates mass participation (Smolianov and Zakus 2006, 2008, 2009a, 2009b). Referencing domestic and global practices, particularly from healthy nations

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successful in skiing and snowboarding, could provide information on what might be implemented as ‘best practice’ in the US to advance performance and participation structures, processes and programs (Sparvero, Chalip & Green 2008). The authors built a model of integrated elite and mass sport development from past research and formed the foundation for a questionnaire and interview schedule for skiing and snowboarding coaches and administrators to generate a snapshot of perceptions of the current sport system and possibilities for its further development.

### **Material & Methods**

The ideal-type model emerges from the integration of instruments that have been used to analyse and compare national elite sport systems (e.g., Baumann, 2002; Green & Oakley, 2001; De Bosscher, De Knop, Van Bottenburg & Shibli, 2006; Digel, 2005). While the previous concepts focused on elite sport, the model used in this inquiry was developed in reference to practices where mass and elite sport were integrated (e.g., Farrey 2018; Gilbert, 1980; Matveev, 2008; Hanstad & Skille, 2010; Riordan, 1980; Smolianov & Zakus, 2008; Smolianov, Dolmatova et al., 2020). There is a particular emphasis on innovative practices used in different socio-economic conditions but not emphasized in previous constructs, including affordable access to high quality coaching, facilities and events at all levels of participation; training and rewarding everyone based on multi-stage scientifically developed lifelong methodologies for general fitness and sport-specific training (Fetisov, 2005; Isaev, 2002; Matveev, 2008; Platonov, 2005; USSA Training, 2021; Alpine Canada, 2021; USAH, 2021); and new tax incentives for personal sport spending (IHRSA, 2021) as well as corporate and philanthropic donations (CAF, 2016) across the world. The model has received scholarly validation (Smolianov & Zakus, 2009a) and shown to be a framework for program analysis that is not culturally bound. It was used in 15 studies to evaluate and advance systems of various sports in different countries - from soccer and tennis in the USA (Smolianov, Zakus & Gallo, 2014) and swimming in the Netherlands (Zeeuw, Smolianov, Dion et al., 2017) to karate in Russia (Smolianov & Dolmatova, 2021) and football in Nigeria (Kaka’an, Smolianov, Lian, Dion, Schoen & Norberg, 2019). The Zambian study (Smolianov & Musunsa, 2018) assisted the country with a systematic national sport development plan. In the US, the published research results were used by USA Rugby (Carney, Smolianov & Zakus, 2012) to develop a multi-million dollar plan that helped to bring rugby back to the Olympics and recognize USA Rugby as an official National Governing Body under the United States Olympic Committee.

As most comparative sport models, this study provides descriptive explanations of the selected ingredients contributing to successful performances and is validated through practices of countries that have demonstrated international sporting success. This study’s model is focused on exploring unusual and fringe practices as sport systems, particularly at HP level, are dynamic, complex, and varied in design (Sotiriadou & De Bosscher, 2013) due to the fast-changing sporting, cultural and political environments (Digel, 2002; De Bosscher, Shibli, Van Bottenburg, et al., 2010). There is also agreement among such authors as Bravo et al. (2012); De Bosscher et al. (2006); Digel (2005); Fetisov (2005); Platonov (2010); and Smolianov and Zakus (2008, 2009) that mass sport participation and elite athletic performance should be organized systematically to support each other. This process of developing participants from recreation to HP involves macro-, meso-, and micro-levels of policy and support, all considered in this research, as adapted from scholars on sport policy analysis Green and Houlihan (2005), De Bosscher et al. (2006), and De Bosscher et al. (2010). They referred to the macro-level as the social and cultural context (including consideration for GDP, population, and state-society relationship); the meso-level focused on sport policies; and the micro-level related to the individual athletes and their close environment (Catanescu & Cojanu, 2021; Earp, Hatfield & Downing, 2021). As the model of De Bosscher et al. (2006, 2010) used for an international comparison of the sports policy factors leading to international sporting success in 15 nations (De Bosscher, Shibli, Westerbeek et al., 2015) was critiqued for lack of qualitative case analysis and debatable use of variables, which assumed similarities of cases and could overlook fundamental differences that may exist within sporting systems (Henry, Dowling, Ko & Brown, 2020), the current study’s model utilizes more in-depth qualitative analyses of documentation, surveys and interviews. To test the theoretical model qualitatively as recommended by Henry et al. (2020), the sport systems of different nations including the US, the UK, Russia, Senegal and Qatar were analyzed in comparison to ascertain best practices for athletes to gain a viable education experience and career development for life (Ridpath, Smolianov, Harris, Akindes & Ishac, 2019) based on interviews with sport professionals and case studies utilizing 250 bibliographic sources. Another advancement from previous models and research from US volleyball (Hopkinson et al., 2018), wrestling (Smolianov, Dolmatova et al., 2020) and golf (Smolianov, Morrisette et al., 2020), involved the utilization of Cronbach’s alpha ( $\alpha$ ) statistic to evaluate validity and reliability of the instrument. Items within an element were consistent as all the Cronbach’s  $\alpha$  values for the data across all sports and elements were larger than 0.7.

King (2009), whose concept was also used in this study’s model, examined policies and governance in local communities at the “macro- and meso-” levels of sport development: such macro-level influences on policy as public attitudes towards sport, health, and education policy communities and central government, and meso-level relationships and resources for organizations in the local sport networks. Our research also integrated AI

Mofarreh's (2016) definitions of the three levels: macro- (governmental), meso- (school), and micro- (teachers, students, and administrators). Reflecting the variations in the use and application of the three levels, Johnson (2013) investigated only two levels of policy influence on science education reform: macro-level (federal and state) policies which result in the creation of micro-level (district and school) policies. Similarly, Barasa, Molyneux, English & Cleary (2015) attempted to set healthcare priorities at the macro (national) and meso (decentralized health systems and health facilities) levels. In other socio-economic fields, Dunlap, Johnson, Kotarba and Fackler (2010) investigated the impact of macro-level social forces, such as economic trends, employment, housing, homelessness, and effectiveness of public education on micro-level consequences such as poverty, alternate occupations, and drug dealing. Bergström and Dekker (2014) studied human resilience in the context of inter-connected health and social systems, and referred to the macro-level as societal, meso-level as organizational, and micro-level as related to processes and individual action. This perspective is also incorporated in the theoretical framework of the current study.

Our framework borrowed from business researchers Kim, Wennberg and Croidieu (2016) who analyzed entrepreneurship mechanisms embedded within complex social structures through macro-institutional and micro-individual characteristics as well as meso-level social structures. At these intermediate levels social groups, associations, and other collectives operate between the two ends of the institutional spectrum, a concept based on five other studies which linked country-level (macro) characteristics with individual-level (micro) outcomes of entrepreneurial actions (Kim et al., 2016). Finlay, Mugford, Bredin, Scott, Taunton and Warburton (2020) investigated the management of change and the related performance dimensions of multiple-discipline science and medical services departments in high performance sports organizations by considering the perspectives of change management and components of performance management at the micro (individual), meso (operational) and macro (strategic and contextual) levels. Jeurissen (2005) studied business ethics at macro-level institutions, the market, government, cultural traditions and the like; meso-level of the organization, its structure and culture; and the micro-level of the individual in the organization.

As all known comparative models have strengths and limitations while serving various research purposes (Sotiriadou & De Bosscher, 2013), the authors of this study combined the above described models to develop a new hybrid model which attempts to provide a balanced, even focus among the macro-, meso- and micro-levels. The De Bosscher et al. (2015) model focuses on the meso-level, but most sport organizations aim to develop participants at the micro-level. Sotiriadou and De Bosscher (2013) stressed that in order for athletes to thrive, managers, coaches, and sport scientists should work together, and that more multidisciplinary synergies in HP sport and supporting research are needed if we are to reach solutions based on a new understanding of complex situations. This is particularly important for our research of integrated mass and elite sport structures and practices depended on and connected systems of education, healthcare, and community services. Following the recommendations by Sotiriadou and De Bosscher (2013), the current study analyzes the useful experiences of integrating mass and elite sport from the athlete perspective. Our model stresses interconnections among the levels, such as macro-level policies used to impact healthy sport behaviors through regulations of advertising and marketing, school provisions, retail offerings, and taxes and levies (Swinburn, 2008), which directly and indirectly influence sport development at meso- and micro-levels. When the performance and health of athletes and masses of general population are advanced in integration, this ultimately helps reach goals of many supporting agencies and contribute to macro-level socio-economic success. Again, the key idea in this process of integrated development from recreation to high performance is that of macro, meso, and micro levels of support and policy. Macro level elements refer in this study to socio-economic, cultural, legislative, and organizational support for a national sport system by the whole society. The meso level includes infrastructures, personnel, and services enabling delivery of sport policy. The micro level consists of operations, processes, and methodologies for development of individual athletes. All the sport system components overlap at different levels (De Bosscher et al., 2006), providing a holistic system of sport development where high performance sport integrated with mass participation.

When high performance and recreational sport are connected, goals of supporting agencies, ranging from health and fitness to competitive success and commercial objectives, can be achieved (Fetisov, 2005; Isaev, 2002; Smolianov & Zakus, 2006, 2008, 2009a). The developed model suggests a globally applicable theory of how to advance HP sport (programs preparing athletes for national and international televised competitions) and benefit mass participation (physical education (PE), recreation, health and fitness programs). This is a significant challenge that faces sport developers due to insufficient conceptual and practical frameworks, often leading to poorly functioning sport systems (Green, 2005).

The model detailed below is based on the literature mentioned above as well as the following works: Bloom (1985), Broom (1986, 1991), Buggel (1986), Clarke (2002), Clumpner (1994), Conzelmann and Nagel (2003), De Knop et al. (2004), Duffy et al. (2001), Gibbons et al. (2003), Greenleaf et al. (2001), Houlihan and Green (2008), Johnson and Ali (2002), Krüger (1984), Kuper and Sterken (2003), Larose and Haggerty (1996), Nys, De Knop and De Bosscher (2002), Oakley and Green (2001), Riordan (1989, 1991), Sedlacek, Matousek, Holcek & Moravec (1994), Semotiuk (1990), Sturkenboom and Vervoorn (1998), Van Bottenburg (2000), Van den Berg (2001) and Wells (1991). The micro-level elements one and two indicate that successful systems for

most sports, including skiing and snowboarding, try to identify talent and gradually develop participants into high performers. These follow hierarchical pools of athletes who are rewarded financially and have access to increasingly sophisticated and scientifically based multidisciplinary performance, career and lifestyle support.

Effective functioning of the micro level requires element three, which includes easily accessible, high quality facilities, equipment, and coaching for each age and level of participation. In each community, skiing and snowboarding or such summer alternatives as roller skiing and skateboarding could be part of a multi-sport hub where; sports share resources, travel takes little time between home, training and school, and access to medicine and cultural venues is maximized. Another important condition for the micro level is element four - sufficient well-organized competitions at all levels, and the integration of commercial tournaments into a plan of amateur competitions gradually preparing athletes to achieve peak performance at major events. This element also implies that educational, scientific, medical, philosophical, and promotional supports are available at each level of participation. Systems of education, accreditation, scientific, and other support systems should be provided to all sport specialists, most importantly to coaches, as recommended by the USSA.

Provision of the meso level services results from multiple partnerships in order to obtain sufficient resources, exchange expertise and achieve common goals to influence the environment of mass and elite sport, particularly mass media, sponsorship and overall society. These are areas in which policy may direct the type and nature of systemic organizations required for a holistic sport delivery system. For a cooperative long-term functioning of all these elements, funding and structures of mass and elite sport systems must be balanced and integrated, which relates more to legislative, ideological, and systemic government inputs.

Successful sport systems require macro-level societal support and balanced funding of elite and mass sport from each source; mass and HP programs and facilities developed in integration by government departments, the nation's Olympic Committee, National Governing Bodies (NGBs), and clubs; balanced power between the government on one side and NGBs, training centers, clubs, and communities on the other; PE and sport integrated at childcare facilities, schools, and universities; a pyramidal system of sport clubs for each participation level with a dual goal of maximizing participation and developing excellence; progressive participant and coach rewards for fitness and elite performance; a high number of dedicated professional well-trained coaches at all levels; and subsidization of and incentives for recreational and elite sport ensuring diversity and availability for all, a full spectrum of sport related activities funded for both recreation and excellence in all appropriate age groups. If HP and recreational sport are connected on the above points of development, they can reach goals of supporting agencies, including: commercial objectives; positive levels of health and fitness; the various elements of social capital, and community development; success in major global competitions; and national pride.

Studies reviewed used either predominantly quantitative (e.g., De Bosscher et al., 2006) or qualitative (e.g., Houlihan & Green, 2008) approaches, some without a specific comparison frame (e.g., Platonov, 2010). In this study both highly structured and open-ended qualitative analysis tools were used. This included a survey of US ski and snowboard coaches where open responses accompanied structured questions. After collection of the surveys, semi-structured discussions with administrators were conducted to add triangulation to the findings. Lastly, a content analysis of USSA website and organizational documentation was conducted.

Previous theoretical framework and a comprehensive literature review were used for the development of a fifty-four-item questionnaire. These statements were validated by twelve international experts, including academics who published on HP sport systems and on sport development and executives of sport governing bodies. The questionnaire was delivered online to 2,000 US Ski and Snowboard coaches, and 102 surveys were fully completed for a response rate of 5.1 percent. The sample size and response rate were common for a study of this nature. Similar samples were achieved in the US rugby, soccer, and tennis studies mentioned above (Smolianov et al. 2014). While the sample does represent a cross section of ski and snowboard coaches at every level, there could be a bias towards those interested in critically thinking about ski and snowboard development. Having grass roots experience, most sampled coaches worked with competitive or elite athletes at high school and university levels, which ensured that the respondents were well informed about practices and dynamics of both the mass and elite systems of US ski and snowboard.

Survey respondents represented 24 states of the country covering each of the four major areas in the US ski and snowboard governance structure: Northeastern, Southeast, West and Central regions. While 50 percent of those surveyed coached skiing and snowboarding beginner/intermediate level athletes; 57 percent coached high school athletes; 28 percent coached division I, II, or III college and university athletes; 22 percent coached masters or adult level athletes; and 20 percent coached elite level athletes. A relatively high proportion of the coaches reported having a bachelor's degree (87%), while 41 percent have a master's degree and 9 percent received a doctorate degree.

Of those who responded to the survey, 93 percent classified themselves as white; only one percent of the respondents classified themselves as black or African American; and only one percent identified themselves as Asian. Of those who responded to the gender question 30 percent were female and 70 percent were male.

Survey instructions asked respondents to think about current structures and systems of ski and snowboard organizations in the US and to indicate how often the elements and practices were evident, from

'never' (1) to 'always' (5), on a five-point Likert Scale. Survey responses are presented as both average scores and aggregated percentages of perceived current practices. Aggregated percentages of responses allow appreciation of the distribution of coach responses. Cronbach's  $\alpha$  statistic was used to assess the internal consistency of the items used within each element of the model. Cronbach's  $\alpha$  is a well-documented (Meyers, Glenn, & Guarino, 2013; Schmitt, 1996; Winand, Zintz, Bayle & Robinson, 2010) measure of internal consistency of a set of scale items (i.e., the degree to which the items all point in the same direction). The value of Cronbach's  $\alpha$  was consistently reported between 0 and 1, with values toward one indicating more strongly consistent items. Using this statistic to evaluate sport governing organizations, Winand et al. (2010) suggested interpreting Cronbach's  $\alpha$  values above 0.4 as "slightly consistent" and those above 0.7 as "consistent." The Cronbach's  $\alpha$  values for each of the seven elements are: Element 1 Talent Search and Development with Cronbach's  $\alpha$  value 0.816; Element 2 Advanced Athlete Support – 0.917; Element 3 Training Centers – 0.875; Element 4 Competition Systems – 0.884; Element 5 Intellectual Services – 0.901; Element 6 Partnerships with Supporting Agencies – 0.732; Element 7 Balanced and Integrated Funding and Structures of Mass and Elite Sport – 0.855. The values indicate consistency in each element.

Study participants were also asked to elaborate on their responses through open written comments. Finally, semi-structured telephone interviews with eight regional administrators were conducted to gather further information regarding the challenges and advancement of US ski and snowboard. To address concerns by Henry et al. (2020) about lack of qualitative analysis of variable-oriented approaches, surveyed coaches were asked to elaborate on their responses through open written comments. Subsequently, semi-structured interviews (personal direct communication, telephone, or e-mail conversations) with eight regional administrators were conducted to share the coach survey results and gather further information regarding possible advancement of US skiing and snowboarding. The interviews were based on the seven elements of the model. Inductive coding techniques followed by researcher discussions led to refinement of themes. The open-ended survey comments were analyzed to identify common opinions in order to specify and prioritize the areas for improvement, while discussions with administrators informed with survey results focused on revealing indicative and innovative practices implementable nationally. The above qualitative techniques together with the analysis of published and organizational documents on the identified areas of potential improvement helped this study to overcome an inherent danger of the variable-oriented approach applying a 'one-size-fits-all' framework across all nations and sports (Henry et al., 2020). This study investigates US skiing and snowboarding as unique system and uses the global practices or survey variables only as starting points for deeper and broader qualitative analysis, trying to bring this approach closer to a mixed method recommended by Henry et al. (2020).

## Results

### *Element 1: Talent Development*

Element one was viewed negatively by 49% and positively by only 16% of the responded coaches. The greatest potential for improvement was identified to be in paying coaches according to their certification levels based on coaches' education and achievements of entrusted athletes - a practice which received 80% of negative responses. Investment in better and more systematic coach salaries will help the other two lagging practices with 77% of negative scores: increasing the number of full-time coaches and coach expertise across all participant ages and levels. This will help more coaches to be better equipped with using global best practices in attracting and retaining participants. More than half (57%) of the respondents were uncertain of or not familiar with such talent identification and development practice as introducing children to skiing and snowboarding from outside the sport's participation base. According to 62% of respondents, more resources (coaching, facilities, equipment, cash, etc.) are needed from various supporting organizations for skiers and snowboarders to progress through their developmental stages.

Expressing the common theme through open responses that better funding is needed to improve this element, Coach 31 (October 17, 2018) stated: 'A good foundational coaching development and certification is in place, but resources - both money and numbers of coaches, are not there to support it. Only high performing athletes with resources can really take advantage of the athlete development system. More efforts and opportunities are needed to get a wider range of athletes exposed and coaches to facilitate getting the best athletes into the sport.' Another important issue that we see in the talent search development is that more feasible pathways are needed, and the pipeline for development needs to be improved. Administrator C (November 16, 2018) suggested that '...more support (staffing, programs, training, etc.) by USSA at the grass-roots level would help stem the attrition of athlete's participations at the various age class levels as they move through the system.'

### *Element 2: Advanced Athlete Support*

Data shows that 34% of responded coaches were negative and 20% were positive about this element. The high positive rating (60%) was given to the enforcement of doping. Statement one had the lowest rating (53% negative) indicating that athletes aren't receiving the necessary support from their places of work, which is consistent with opportunities to advance other athlete services: 52% of the coaches did not think athletes are assisted well with formal education and careers outside sport by clubs, state and national skiing and

snowboarding governing bodies, the USOPC and sponsors; and 49% were concerned that athletes leaving elite sport are not provided with individualized lifestyle plans for physical and psychological health - the practices with which, again, half of the coaches were uncertain of or not familiar with.

Coach 47 (October 12, 2018) expressed the common opinion that ‘...more funding needs to go to support athletes, even ones that are just barely making the team. It is insane to require athletes to pay their own way and also be on the US ski team. As a result, we have seen more independent teams pop up. If USSA continues to not support their athletes, we will see more and more athletes retire early or go to independent teams. Bottom line... our national ski team needs to follow the model of other nations that we are trying to catch up to competitively.’ Administrator E (November 1, 2018) explained the issue stressed by other interviewed executives: ‘The competitive lifespan of a skier is very short and time consuming, most times this is all you can focus on, so they never finish a college degree. Once they are done with the sport it’s hard for them to find a well-paying job... without a degree... coaching in the sports gets little to no money, so they would need a second job.’

### ***Element 3: Training Centers***

Element three shows that four times more respondents were negative (44%) than positive (10%) regarding this element. While facility cost was again the most burning issue with 60% negative and only 2% positive given to statement three, another noticeable low rated practice related to training centers’ location convenience and good transportation. Coach 16 (October 16, 2018) stated: ‘Athletes who train full time - year-round struggle the most with balancing their training and competition schedules with their education. Training centers, especially the ones that house athletes who are also online students, should have stronger relationships with educational institutions and educational support at all levels (middle/high school through college/university).’ Another problem brought up by coaches is the lack of finance to fix or develop training locations. Administrator D (November 22, 2018) stated ‘The problem lies with the location of the center. This high-quality training facility is not easily accessible to all of their athletes. There is only one facility of its kind in the entire country which restricts access to athletes who may not be able to afford travel and other expenses. A simple solution for this could be to build similar centers in different parts of the country so that elite training facilities such as this one can be accessible for all of their athletes. However, they must also bring in more revenue in order to build these facilities, which would be a challenge.’

Given the number and spread of ski and snowboard facilities across geoclimatic zones of the US, it is paradoxical that items six and seven had 42% and 43% of negative responses respectively. Lack of cooperation is a key reason. When talking about statement 7 Administrator 5/E (November 1, 2018) said, ‘The time and money it takes to travel to areas depending on where you live is hard for some people. The only way you can fix this is build more facilities but that cost[s] a lot of money that as of right now is not being put into USSA.’ Learning from how the networks of multi-sport schools in Russia (Bravo & Smolianov, 2017) as well as IMG academies in the US and University of Bath in the UK (Smolianov et al., 2014) integrate facilities and services for different ages and levels, USSA could help Community Olympic Development Programs connect clubs, schools, universities, community centers and commercial partners for further advancement of mass and elite skiing and snowboarding.

### ***Element 4: Competition Systems***

This is a strong neutral element, with 44% of the perceptions being neutral, 36% of negative perceptions and 19% being positive. The main concern in this element according to 36% of coaches was that USSA and its support mechanisms don’t sufficiently assist in local and developmental events. Coach 54 (October 11, 2018) was quite critical: ‘More educational opportunities on how to run races is needed. We need to put young coaches in situations to learn more about how to run races.’ Administrator D (November 22, 2018) also added, ‘Sometimes the athletes that we get in these competitions are skewed by social class. Some of the best up and coming athletes may not be able to afford to go to all of these kinds of competitions simply because they cannot afford it. This means that we are not always getting the best of the best into these competitions.’ If USSA wants to expand and become more of a well-known organization they need to start becoming more available for all athletes not just certain age ranges, and social classes. Administrator E (November 1, 2018) expressed concern: ‘Some events are able to give sponsorship and scholarships to their competitions if they have the money but in smaller local events they don’t.’ Trying a new sport can change a person’s life so this is crucial to start bringing USSA to different areas of the country.

For item 2, which determines whether professional and amateur tournaments are integrated into a progressive plan of competitions gradually preparing athletes for peak performance, 32% of the responses were negative. Administrator A (November 12, 2018) states ‘Most state/association level events require a large volunteer support structure as we have limited sponsorship support other than at state/association championship events. We attempt to keep racing fees (including event entry and lift ticket fees) to a minimum however, many ski areas really limit the discounts on lifts. From a racer/parent perspective, the racer is really only getting a few runs at the area while waiting for the race runs and parents spend most of their time watching the event vs. skiing

the area.’ This element’s statement with the highest neutral responses of 59% was ‘event sponsorship incomes are used to develop competitions for all participation levels’, indicating that more than half of responded coaches don’t know or are blasé about this practice. USAB should continue developing events for all and not to support charities with questionable effects on mass participation and health in the US, as done by some sport organizations for public relations purposes.

***Element 5: Intellectual Services***

This is another element with many (49%) neutral responses, and similar proportion of negative (28%) and positive (23%) perceptions. Majority of respondents (38%) indicated that research results are not well communicated to coaches, and only 19% had positive perceptions about this service.

The improvement suggestion is obvious from this response by Administrator B (November 14, 2018): ‘...If you are a member of US ski & snowboard’s coaches association, you can sometimes find the latest research on athletic development and performance. It doesn’t come to everyone’s inbox automatically. You need to be motivated to look for it and monitor other independent sources, too.’ Administrator A (November 12, 2018) agreed with suggestions by coaches and administrators: ‘Although US ski & snowboard association has a ton of material available online, it hasn’t been easy to find until the website redesign. It would be a good idea for US ski & snowboard association to send out the website structure as a focused email to its’ coaches/administrators. You really need to go searching for the information rather than the info being proactively distributed.’ Clearly information on new practices and techniques needs to be provided to the USSA community by regular emails, social media messages and various online forums.

***Element 6: Partnerships with Supporting Agencies:***

The data within Element 7 demonstrates divided but relatively critical perceptions with 42% negative, 13% positive and 45% neutral views on this element. Items one and five had the most negative responses indicating that there is insufficient support for ski and snowboarding development from various levels of government and that more media coverage is needed for ski and snowboard events.

Administrator B (November 14, 2018) expressed the common concern: ‘There is no support from any level of government, so anything added here would improve this score. In rare cases, skiing is a public high school sport...’ Administrator D (November 22, 2018) agreed and suggested: ‘With support and aid from the government, we would be able to improve the organization in all facets.’ The lack of money is the concerning issue which is expressed in open responses for this and all other elements, causing negative feedback to many items across the survey. However, the response by Administrator H (November 18, 2018) suggests that lack of financial resources may not be such a limitation if in-kind support obtained through many excellent partnerships is achieved with more organizations through deeper and longer agreements: ‘We have a large number of valuable partnerships, from the USOPC to resorts that provide training, and extensive national medical network, partner high performance centers, partner clubs and academies.’

***Element 7: Balanced and Integrated Funding and Structures of Mass and Elite Sport***

The responses within Element 8 were 40% negative, 41% neutral and only 19% positive. The most critical problem (69% negative) was that skiers and snowboarders are not diverse as general population, consistent with the 67% of negative responses regarding availability and affordability of sport schools/academies. Coach 75 (October 16, 2018) had a strong stance on this issue: ‘Athletes from high income families are the only athletes that can excel in skiing. Low-income athletes do not have the opportunity to compete or obtain coaching. We are losing potential world-class athletes because of income/cost barriers.’ Coach 79 (October 16, 2018) agreed: ‘As long as access to skiing... is seen as open to only the rich or those with a work connection to a ski center the sport will suffer. Add to that the low quality of ski instruction in the US and the fact that ski area operators have no interest in improving that, the level of people entering the sport will be poor. In short our national team will be the fastest rich kids in the world...’ Solutions to these issues are partly reflected in the low scores for the two finance-related items: corporate and philanthropic tax incentives to support mass and elite ski and snowboard (49% negative) and sport participation, including ski and snowboard, to be rewarded with reduced personal tax (59% negative). Administrator B (November 14, 2018) agreed and stated: ‘I don’t see that ever happening in a broad-based way. Professional coaches and athletes can deduct certain expenses related to the sports of skiing and snowboarding, but unless the US government decides to implement a broad-based deduction for sports-related participation, no reduction in personal taxes will happen. Too bad. It might help lower obesity levels and thus medical costs to society.’

The USSA budget increased from \$35.7 million in 2017 to \$35.8 million in 2018 and was planned to grow to \$36.3 million in 2019, with the important goal for 2019 to generate \$15 million towards the Marolt Athlete Endowment and give \$2 million more than in 2018 to the athletes in order to prepare for the Olympic Games (USSA Financial Statements, 2017-2018). Over 80% of the USSA budget has been generated from and spent on elite athletes (USSA Annual Reports, 2015-2017; USSA Budget, 2018). Given the USSA goals, the proportion of the mass participation budget could be increased, particularly to grow cross country

skiing which has the greatest potential among the USSA sports for increasing US medal count and benefiting health and wellness of domestic communities, especially if integrated with similar sports not requiring snow such as roller skiing and blading. Consistent with the stagnant trends in mass participation, revenues from sponsorship and media contracts generated only \$12 million in 2018 and were not planned to increase in 2019 (USSA Financial Statements, 2017-2018). Opportunities will increase for additional corporate and media incomes if mass participation and USSA membership grow and bring more consumers and viewers devoted to the USSA disciplines. The USSA planned to increase spending on events from \$6 million in 2018 to \$7 million in 2019, but most of the \$1 million increase was for elite events such as 2019 World Championships in Freestyle, Free-skiing and Snowboarding. Spending on school and smaller events was planned to only increase by \$100,000 from \$3.4 million in 2018 to \$3.5 million in 2019 (USSA Financial Overview, 2018).

### **Conclusions and recommendations**

The USSA international success is evident, yet its effective elite athlete development systems for wealthy families can be expanded to benefit all levels of participants and increase their numbers, particularly cross-country skiers.

At the micro level, the excellent education and certification developed by the USSA for coaches detailed by Walshe et al. (2006) should be easier to find and access and used to educate more coaches of all levels, and coaches' salaries should take into account the level of their certification. There needs to be more developmental programs available for all. Australian, Eastern European and Scandinavian methods of talent development are starting to appear in the US, and literature on long-term athlete development guidelines should be further translated to deepen and broaden the instructions provided by the American Development Model (ADM) (Project Play, 2017; Smolianov et al., 2014). The number of well-paid and educated coaches and programs providing healthy age specific ADM conditions will increase if the USSA further investigates world's best skiing and snowboarding practices, and focuses on how skiing and snowboarding achieve well-being for the masses together with HP athletes, as done in such countries as Norway and Finland (Farrey, 2018; Walshe et al., 2006; Smolianov et al. 2014). The ADM delivered to coaches could add guidelines on how to attract athletes from outside the sport's participation base, particularly from schools and other sports as detailed by Smolianov et al. (2014). The important part of USSA's best practice in healthy athlete retention is a "Physical Assessment CD" for coaches in 320 USSA affiliated clubs; an electronic tracking system and database for all USSA athletes is part of this program. However, it is developed mostly for HP athletes (Walshe et al., 2006). For retention of all participation levels and ages, ADM guidelines should include comprehensive fitness test requirements on strength, endurance, flexibility and coordination for all ages at least on 11 lifelong stages as detailed by GTO fitness system (Keating, Smolianov, Liu, Castro-Piñero & Smith, 2018). To improve athlete support, the benefits of advanced training, restoration and illness prevention methods should focus more on young and intermediate level skiers and snowboarders to ensure all athletes receive sufficient support for healthy lifelong participation. The support ski and snowboard athletes receive should depend less on which school or university a student attends. As done by USA Hockey (USAH, 2021) who pioneered the ADM across the US, the most experienced coaches should be hired as ADM coordinators in order to help each coach and athlete in each region understand and follow ADM guidelines and help mobilize resources for the development of each participant to the highest desired level of performance. To prolong competitive career, lifelong healthy lifestyle plans should be provided, and to help with relevant education and job/career paths, the US could implement the practice the Chinese and Russian borrowed from the USSR of integrated athlete development path through publicly funded sport schools, colleges and universities, (Ridpath, Smolianov, Harris, Akindes & Ishac, 2019) where athletes are taught a variety of biomedical and sport specific disciplines affording them a skill or career related to their field to earn money while obtaining an advanced degree.

At the meso level, to advance training centers, most programs should be easier to access regardless of one's financial means or talent, and all participants should have qualified coaches. The USSA model is very instructive as to how systematic coaching development could occur across all sports and across the nation. The USSA studied the best international practices to develop and deliver a systematic, national athlete development sport education program for all levels of coaches. Research on the USSA top athletes also provides data for this program. Tied to this, the USSA has since 2001 used its "Elite Performance Model (EPM)" to define and evaluate all aspects of its HP programs (Walshe et al., 2006). Since 2003, the EPM has informed the development of a Coaches Education Program. The USSA invested heavily in cutting-edge scientific research to assist coaches and athletes at both the mass and elite levels. The EPM identifies the critical factors for elite success and then makes that information available to coaches and athletes. The creation of the USSA's multi-media educational resources and courses is the operationalization of this model. The EPM coach certification program and its underlying continuing education goals consist of five stages. Each stage includes criteria on athlete age and capability level, years of experience, and appropriate elements of sport science, medicine, management, pedagogy, and sport-specific skills and training. The USSA delivers sport-specific, advanced sport science and management courses, while general courses are offered through partner universities and the USOC. Coaches record the results and then test their athletes again to create tailored training programs. This is

completed several times a year. The areas tested are the same for the entire junior-elite development pipeline (Walshe et al., 2006). However, better coach education is not mentioned in the USSA budgetary plans (USSA Budget, 2018; USSA Financial Overview, 2018), even though it is necessary for the sport's development according to the coaches and administrators we surveyed and should be the priority for systemic improvement and increased investment. The key message from this study is that additional public resources should be attracted to make elite conditions available so that more skiers and snowboarders and their coaches could benefit from better educational and promotional support, better facilities and infrastructure, focusing on both building new venues and increasing efficiency to better access and utilize the current facilities. Coaches and administrators asked to improve event organization and communication to increase mass participation, stressing that if national championship sponsorship incomes are used for smaller competitions, these minor events would have a higher chance for success, thus more of them could take place and more competitors could participate, giving chances to more athletes staying in the sport and progressing. As in Nordic nations, US mass skiing and boarding events can attract mass and elite participants similar to how running marathons do in the US and globally. Innovative facilities around the world are making skiing and boarding less dependent on climate, but USSA facility development spending was to increase from only \$1.8 million in 2018 to only \$1.9 million in 2019 (USSA Financial Overview, 2018): training centers for year-round skiing will benefit both participation and performance.

At the macro level, greater opportunities for beginner and intermediate level skiers and snowboarders can be increased through partnerships with such sports as roller blading/skating/skiing and other cyclical/endurance sports from which cross-country skiing could draw more participants, as well as skateboarding, surfing, acrobatics/gymnastics and other sports which could prepare more potential snowboarders. Such partnerships are possible at event, programming, school, club and training center levels. The ability to more closely cooperate for mutual benefits of all possible partners was found to be a critical factor of success for multi-level leadership of the United States Olympic & Paralympic Committee and USA Hockey (Smolianov, Grønkvær, Ridpath & Dolmatova, 2020) as well as for major event sponsorships integrated with corporate advertising for multi-decade partnerships (Smolianov & Shilbury, 2005). To increase public funding of the sport, NGBs need to work directly with governments stressing the declining participation trends and demonstrate how their financial assistance could improve public health. Skiing and snowboarding should be promoted more in educational systems so that it becomes a primary sport. To better balance and integrate funding and organizational structures of mass and elite skiing and snowboarding, programs should reach impoverished areas and diverse participants. New York State, for example, decided to set aside \$5 million in annual revenue from mobile sports gambling activities to fund youth sports in under-served areas (TIME, 2021). Developing IMG-type academies with more financial flexibility and financial aid recipients will attract individuals from all different demographics to skiing and snowboarding. A strong liberal narrative in the US supports the idea that people should be able to direct charitable funds at their own discretion to causes of their choosing, and the relatively high rate of corporate taxation in the US (35% compared to 30% in Australia, 26.5% in Canada, 25% in China, 20% in UK and Russia) leads to greater giving: countries with the higher rates of taxation see higher responsiveness to those incentives particularly amongst the wealthiest tax payers (CAF, 2016). As nations across the world from Canada to Russia experiment with new ways to reduce personal tax for the amounts spent on sport participation, the planned US tax increases (Scott, 2021) should expand opportunities to stimulate individual sport spending by the US federal government which also started to follow this practice (IHRSA, 2021). As our interviewed USSA leaders indicated, these tax incentives should be utilized more in the US to help skiers and snowboarders train and compete, as well as assist everyone to become more physically active and healthier thereby reducing medical expenses to the government, to corporations and ultimately to all of society.

#### **Conflict of interest**

The authors declare there is no conflict of interest.

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