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“Gymnasts Are Like Wine, They Get Better With Age”: Becoming and Developing Adult Women’s Artistic Gymnasts

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ABSTRACT

Women’s artistic gymnastics is commonly understood to require early entrance and intense training during childhood. Most gymnasts retire before reaching adulthood. In recent years, the gymnast population at the highest level has “aged.” In this article, we adopt a socio-pedagogical perspective to explore the training contexts, pubertal development, and associated learning 10 older elite gymnasts reported. We develop a cultural perspective of gymnast development and show that transitioning through puberty allowed the gymnasts to extend their careers. Support from their coaches and parents, self-reflective time, and genetic predispositions facilitated the transitioning. Through this, gymnasts gained control over self, body, relationships, and performance. In conclusion, we provide implications for gymnast development practice.

KEYWORDS

Athlete development;
cultural perspective of
learning; horizons for action;
horizons of learning; puberty
as career transition phase

Introduction

Women’s artistic gymnastics (WAG) is commonly understood as a sport that requires early entrance, intense training during childhood, and performance peaking before reaching adulthood (Bergeron et al., 2015; Côté, Lidor, & Hackfort, 2009; Hannaford, 2012; Jemni, 2013; Zetaruk, 2000). This understanding became established during the 1970s, during which decade young gymnasts such as Olga Korbut from the Soviet Union and Nadia Comaneci from Romania achieved competitive success (Barker-Ruchti, 2009). Key assumptions that became established were that childhood is the ideal life phase for learning complex movement skills, and a child body is most efficient in performing aerial (acrobatic) skills and best able to sustain the sport’s perceived intense training demands. In response, puberty became assumed to jeopardize and even diminish the necessary physical and coordinative prerequisites (Ryan, 2000). As gymnasts performing this form of WAG won increasingly more medals, gymnastics coaches around the globe adopted the selection and training practices that the Soviet Union and Romania championed (Kerr, 2006; Riordan, 1999). While this has allowed increasingly more countries to be competitive, research into Western WAG contexts has shown that contemporary practices may harm its participants. This previous research demonstrates that coaches employ

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uncompromising coaching practices and create abusive coach–gymnast relationships that cause short- and long-term injuries, emotional disorders, and early retirement (Barker-Ruchti & Schubring, 2016; Barker-Ruchti & Tinning, 2010; Jacobs, Smits, & Knoppers, 2016; Kerr, Berman, & Souza, 2006; Kerr & Dacyshyn, 2000; Kerr & Stirling, 2012; Pinheiro, Pimenta, Resende, & Malcolm, 2014; Smits, Jacobs, & Knoppers, 2016; Stewart, Schiavon, & Bellotto, 2015; Stirling & Kerr, 2013, 2014). Research further indicates that elite-level WAG training may cause body dissatisfaction (Petrie & Greenleaf, 2011) and eating disorders (Kerr et al., 2006; Sundgot-Borgen & Garthe, 2011), delay menarche, cause menstrual irregularity, lower bone density, and stunt growth (Douda, Lapidis, & Tokmakidis, 2002; Malina et al., 2013).

Existing research also outlines that the common WAG practices create gymnasts that are poorly equipped for lives after sport (Dacyshyn, 1998; Lavalley & Robinson, 2007; Warriner & Lavalley, 2008). As gymnasts enter WAG early and devote their childhoods and adolescent years to training, they are argued to have very limited opportunities to explore their selves and experiment with different roles (Lavalley & Robinson, 2007). Instead, as Barker-Ruchti's (2011) and Barker-Ruchti et al.'s (2010, 2016) research shows, the commonly adopted coach authority, harsh training methods, and disciplinary coaching practices create *docile* gymnasts. While some coaches desire such compliance because it is assumed to create gymnasts that do not question training intensity and content and potential risks of aerial movement skills (Blue, 1988), docile gymnasts have been found to develop extreme self-control and -critique (Barker-Ruchti & Tinning, 2010; Kerr & Barker-Ruchti, 2015). Upon retirement, this constant drive for perfection has been shown to create feelings of lack of control over lives, pre-occupation with body shape and weight, and identity loss (Barker-Ruchti & Schubring, 2016; Kerr & Dacyshyn, 2000; Warriner & Lavalley, 2008). In many cases, adjusting to life after WAG requires considerable effort and (professional) support (Barker-Ruchti & Schubring, 2016; Miller & Kerr, 2002).

Despite existing research consistently problematizing WAG, not all contexts are detrimental. White and Bennie's (2015) study showed that gymnasts are able to develop resilience, which these authors define to include systematic problem-solving, implementation of life skills, and interaction with others as well as self-efficacy and self-esteem. However, as the study examined a context within which coaches purposefully aimed to instill resilience, and the gymnasts had a less intense training schedule as they were competing at a non-elite level, the results must be read with caution. Still, White and Bennie's research findings indicated that WAG coaching and coach–gymnast relationships can be of different character than what appears dominant at this sport's highest levels.

A further vision of how WAG can be practiced differently is being introduced by the “older” gymnasts who have in recent years significantly changed the elite population. By older, we refer to gymnasts who are at least 20 years of age. We choose to call such gymnasts older because their age is significantly higher than the averages of gymnasts who have participated in previous senior-level competitions (e.g., 17.4 years at the 1996 Olympic Games, U. Andersson, Swedish Gymnastics Federation, personal communication, November, 11, 2013). We also define older in relation to the minimum age requirement of 16 for participation in senior-level competitions (Fédération Internationale de Gymnastique, n.d.) and elite gymnasts' common retirement age around this age. A gymnast of 20 years or older, thus, has experienced a long career, commonly spanning two or more Olympic cycles.

At present, the older gymnast population has increased the average age of competing gymnasts, such as to 20.1 at the 2012 Olympic Games (Fédération Internationale de Gymnastique, W. T. C., 2012) and 20.29 at the 2016 Olympic Games (own calculations from the gymnasts listed on www.rio2016.com). The list of recent top-level medal winners confirms that older gymnasts can be successful.¹ Given that puberty is commonly considered as career-ending, how did these gymnasts transition through this phase to prolong their careers into adulthood? Is it possible that their training environments, coach–gymnast relationships, and coaching and training practices are/were different? Further, if contexts are changing, may this affect gymnasts' identities in a positive way? We believe that answers to these questions have the potential to inform long-term gymnast development knowledge and provide concrete ideas for how WAG can be practiced without some of the problematic consequences reported to date. Such knowledge will also be useful for other sports that are currently perceived as to require early entrance and intense specialization during childhood.

Therefore, the purpose of this article is to explore current top-level gymnasts' career extension into adulthood. To achieve this, we draw on semi-structured interviews we conducted with 10 current and former gymnasts who at the time of competing at the highest international level were at least 20 years old. Our analyses specifically aim to explore (a) older gymnasts' experiences of transitioning through puberty; (b) the training environments, coach–gymnast relationships, and coaching and training practices they reported; and (c) their dispositional learning (i.e., non-physical skill learning, such as identity construction). The theoretical perspective that will support our analysis is the cultural perspective of learning for gymnast development we develop below (adapted from Hodkinson, Biesta, & James, 2007; Martindale, Collins, & Daubney, 2005).

In what follows, we outline the theoretical perspective we developed to understand the data we produced. We then describe the research methods and present and discuss the study's results. In the last two sections, we offer gymnast development recommendations and conclude with implications for policy development and coach education.

Cultural perspective of learning for gymnast development

The cultural perspective of learning we draw on was developed by education scholars Hodkinson et al. (2007) and includes two theoretical concepts: theory of learning cultures (TLC) and cultural theory of learning (CTL). Basic to these concepts is an anthropological understanding of culture, which regards “culture as constituted by human, often collective, activity, involving practices, interactions and communication” (Barker-Ruchti, Barker, Rynne, & Lee, 2016, p. 2). The WAG culture, then, is not bound by a location or space but by the “actions, dispositions and interpretations” stakeholders (e.g., administrators, coaches, gymnasts) perform in their daily work (Hodkinson, Biesta, & James, 2008, p. 34). We draw on this cultural perspective because TLC and CTL provide a framework that theorizes learning in relation to context *and* the individual. In transcending individual situations and learning cultures, TLC and CTL offer a perspective we consider essential to understand how gymnasts in a tightly-bound culture of child high-performance sport managed to extend their careers into adulthood.

TLC theorizes cultures as created by practices, interactions, and communication and not, as is common, by location. These cultural activities are assumed to be shaped by both sociocultural,

structural, and situational forces and individuals' performance of these activities (Hodkinson et al., 2008). Through cultural actions, individuals learn, which is what CTL conceptualizes as "becoming" (Hodkinson et al., 2007). Becoming is a continuous and ubiquitous process that is likened to identity construction. Particularly, Hodkinson et al. (2007) employed the concepts of "horizons for action" and "horizons of learning" to theorize how, on the one hand, becoming occurs as ideologies, social positioning, and cultural practices inform individuals as to how they should think and behave and what their future learning can entail (Hodkinson et al., 2007, 2008). On the other hand, as individuals are considered able to negotiate, challenge, and reject cultural activities, they are seen able to deliberate horizons. Indeed, such deliberation is necessary given that contexts change, individuals move through life phases and experience unexpected events; horizons require continuous evaluation and (re)formulation (Hodkinson, 2008). Thus, how and who individuals become is a continuous process of change that is influenced by contextual factors but also particular life phases, serendipity, and individual sense-making (Hodkinson et al., 2007).

We consider becoming's reflexive interplay between context and self as crucial for the analysis of our study's data. Particularly, the perspective allowed us to see how individual agency was implicated in the gymnasts' creation of horizons for/of *adult* WAG careers, and thus prolonged careers. We propose that this situational and agency-driven understanding of learning can further theorize the talent development environment (TDE) thinking that a number of scholars propose (e.g., Abbott, Collins, Martindale, & Sowerby, 2002; Martindale et al., 2005). For one, TDE scholars follow Bloom's (1985) suggestion to "look at the dynamic interaction between individuals and their opportunities," rather than to "search for the definition and identification of the talented" (p. 533). Where we see particular potential to extend TDE thinking is the relationship between environment and development. The cultural perspective of learning does not consider this relationship as one-dimensional only but as reflexive. Thus, TLC and CTL tell us that it is not only "appropriate ethos or culture" that instills "habits and skills that will be effective at later stages" (Martindale et al., 2005, p. 356) but also the agency and purposeful actions by those that are envisaged to learn these dispositions (e.g., athletes). For this to be effective, as Martindale et al. (2005) outlined in their model of effective talent identification and development procedures, relevant visions must be created and made available. Long-term aims and methods, wide-ranging coherent support and messages, emphasis of appropriate development and not early selection, and individualized and ongoing development are considered important (Martindale et al., 2005). In addition, agency in the form of self-driven regulation would also need to be included in these visions.

At present, the contemporary WAG understanding and its associated practices we have outlined at the outset of this article conflict with TDE and athlete agency principles. Yet, as we will demonstrate below, the older gymnasts included in our study spoke of changes to both their sporting environments and individual agency and how these facilitated career prolongation. Understanding these changes and effects thus offers significant potential to improve gymnast development practices.

The study and research methods

The research presented in this article was generated through the research project "Coming of age: Towards best practice in women's artistic gymnastics." This project was initiated in 2013 and examines how older top-level gymnasts have been able to prolong their athletic

careers. In order to capture these gymnasts' experiences, *Coming of Age* was designed as an international project. Ethical approval was gained from Lincoln University Human Ethics Committee (HEC 2013–42).

Sample and recruitment

Purposeful sampling (Charmaz, 2005) and an information-oriented selection procedure were adopted to maximize insight from a small sample of available cases (Flyvbjerg, 2006). Selection criteria were that gymnasts needed to be/have been at least 20 years of age at the time of competing at the highest international level (e.g., European and World Championships, Commonwealth, and Olympic Games). We chose the age criterion because (a) it is significantly higher than the current age requirement for major international competitions (16 years), and (b) the career timeframe beyond the age of 20 may include two Olympic cycles. The competitive level was chosen because training demands and performance goals are most intense at this stage.

To identify suitable gymnasts, the members of the research team drew on their knowledge of relevant athletes. Further, the lists of registered gymnasts of the above-mentioned international competitions held since 2000 were consulted. To connect with the identified (former) gymnasts (from here on “gymnasts”), they were either contacted directly, or contact details were requested from national gymnastics federations. With each contact, project information, including ethical safeguards, was provided. Once those contacted provided written consent to participate in the study, a short demographic questionnaire was sent out, and a suitable time and place for the interview was arranged. At one major 2014 international competition, several of the still-competing older gymnasts were asked to participate in our study.

Ten participants who are/had been competing for Australasian, Asian, European, and North American countries were recruited. Five gymnasts were retired at the time of the interview; the other five were training to qualify for the 2016 Olympic Games. The 10 gymnasts have all competed at least at the World Championship level, and several have attended one or more Olympic Games. Several have won European, World, and Olympic medals both at junior and senior levels. All gymnasts were enthusiastic about the research project and fit an interview into their busy training and/or work/study schedules.

Data production

Each member of the research team conducted interviews. One interview was held with each gymnast. A semi-structured interview schedule consisting of three sections guided each interview. The first section, based on an oral history approach (Denzin & Lincoln, 2005), asked gymnasts to outline biographical information. Questions regarding their entrance into WAG, successes, coaches and coach–gymnast relationships, and training experiences constituted this section of the interview. The second section, based on a thematic approach (Flick, 2005), probed ideals relating to age, body, and training in high-performance WAG. The interviewees were asked to describe situations and instances where these ideals impacted their gymnastics training and/or careers. The third section employed a reflective approach (Miethling & Krieger, 2004), within which the gymnasts were asked to comment on two pictures, one of a young and sexually immature and one of

an older and sexually mature high-performance gymnast. They were specifically asked to comment on how they felt the gymnast would perform and be successful. In all interviews, the research team employed the interview schedule as a foundation but followed creative interviewing principles (Douglas, 1985) to allow room for the gymnasts to lead their interviews. Four interviews could not be conducted in English, and translators were engaged. Two interviews were conducted via Skype. Interviews were recorded digitally, transcribed verbatim, and, where necessary, outsourced for translation into English. Interview lengths ranged from 28–112 minutes, with the average length having been 57 minutes.

Data analysis

In order to explore gymnasts' career extension into adulthood, the first author of this article began analysis by freely coding (Shaw & Slack, 2002) what she considered as dispositional learning (e.g., suddenly understanding something, understanding something anew, changed/better abilities to manage something; Bloomer & Hodkinson, 2000; Hodkinson et al., 2007). In a second step, Charmaz' (2006) axial coding was employed to cluster the dispositional learning codes. Here, it became evident that the major learning the interviewees had described involved a process of developing self-driven regulation relating to themselves, their bodies, their relationships with coaches, and their performance.

In a third step, and in an attempt to identify how contextual *and* individual factors influence gymnasts' becoming and the consequences this has for future learning, analysis focused on capturing the interviewees' narrations of their experiences (Sparkes & Smith, 2014). This allowed for contextual, circumstantial, and individual information to be connected to the dispositional learning that had been coded and themed in the first two steps. It was in this step that the significance of pubertal development as a key transition phase and the importance of coach–gymnast relationships, coaching practices, and training methods to transition through this phase became palpable.

With the completion of this work, the fourth step involved a collective element of analysis that took place between the members of the research team via email dialogue. Each scholar had individually read the transcripts and commented on the codes, themes, and explanations the first author had produced. In a last step, the cultural perspective of learning (Hodkinson et al., 2007) was employed to further theorize TDE thinking (Martindale et al., 2005) and to formulate gymnast development implications.

Results and discussion

We present and discuss our findings in two sections: First, we outline the gymnasts' accounts of pubertal development and the contextual, circumstantial, and individual factors they referred to as having facilitated transitioning through this phase. Second, we present the four types of self-driven regulation we identified as to shape the gymnasts' becoming. Representative quotes, which are referenced with pseudonyms and have been adjusted for readability, are included throughout these sections.

Pubertal development as a key transition period

We have outlined above that childhood is considered the ideal life phase for gymnasts to learn gymnastics skills and that puberty is understood to end careers. For our interviewees, both these realities had relevance. First, nine of the 10 gymnasts recounted early entrance into WAG and talent identification, intense training during childhood, and top-level performances around the age of 16. They also spoke of how the coaching was uncompromising and the coach–gymnast relationship authoritarian and, at times, abusive. Second, the gymnasts framed pubertal development as difficult mainly because of bodily changes and the effects these had on performance. Maria and Christine’s comments are representative:

The hardest period [is] when you start to grow and you can’t feel your body. You come in [to the gym] and can’t do anything. You feel like your body is completely different, you can’t do [basic gymnastics skills].

I had to deal with all the changes at the same time. You gain weight, more muscles, also fat, the body looks more feminine. That was difficult. And you realize that a lot of things are suddenly a lot more difficult than before, you have to support more weight, you hope you land on your feet.

While psychological research confirms the gymnasts’ experiences of performance difficulties due to a variety of bodily changes (e.g., Dubuc, Schinke, Eys, Battochio, & Zaichkowsky, 2010; Pankhurst & Collins, 2013), sociological research on adolescent athletes’ growth and maturation points to how they experience puberty as critical because their bodies do not develop in accordance with sport-specific ideals (Schubring & Thiel, 2014a, 2014b). From a cultural learning perspective, it can be argued that Maria and Christine’s growing and maturing bodies did not fit the WAG’s child ideal and the horizons for performance the interviewees described to have developed as child gymnasts. Indeed, their changing kinesthetic experiences appeared foreign to them and complicated training and performance.

Despite these negative experiences, the interviewees stated that this development was a temporary phase. Collectively, the gymnasts felt that “once you kind of get through that awkward stage” (Michelle), they were able to pursue their WAG careers. As Gina stated metaphorically: “[After puberty], there are no limits ... wine gets better with age.” Although the interviewees’ reference to the temporariness of pubertal development must be understood as part of their retrospection at the time of the interview, it is clear from Christine’s statement above that pubertal development came as a surprise, and transitioning through it had not been part of her horizon of learning.

How then did the gymnasts included in this study manage to reformulate their horizons for/of child WAG to prolong their careers beyond puberty? We could identify contextual, circumstantial, and individual factors. With regard to *contextual factors*, support from significant others was mentioned by the interviewed gymnasts as to have facilitated the transition through puberty. Coach support was considered particularly crucial, as Gina pointed out:

When [gymnasts] come to age 16, 17, 18, that’s when they have their difficult age in the sport and I think that after they reach success at this age, they don’t want to do it anymore or maybe the coach is being impatient with them. If the gymnast and coaches try to be a bit more understanding, then, probably, less gymnasts will quit at that age. So I think just *patience* [emphasis added]. [If they can get through puberty], they can become better with age.

Mona also spoke of how the freedom her coach provided to explore her adult self and conduct was influential:

When I met [coach at the age of 16], I was a trouble maker. She taught me not to compromise [my] commitments. But I didn't feel that I was forced to do anything. Though goals and gymnastics schedules were strictly managed, she left room for me to think about how I wanted to practice and achieve certain goals, which was completely different from how I was coached at high school and junior high school. [With her], I was trained mentally and taught the ways to keep myself to think positively.

What Mona describes in this statement is that during her younger years, she was driven by a horizon for compliance. The “free” structures the coach provided her during her teenage years transformed this gymnast's horizon for action towards ownership, which Mona felt encouraged her career extension. Importantly, this self-formation contrasts existing research that demonstrates how gymnasts are disciplined and left little room for such exploration (e.g., Barker-Ruchti & Tinning, 2010; Lavalée & Robinson, 2007).

The interviewees further described how *circumstantial factors*, particularly relating to injuries, forced time away from WAG and created distance from the sport. The interviewees who experienced such time-outs described these breaks as opportunities to reflect on their horizons for participation (for similar findings, see Barker, Barker-Ruchti, Rynne, & Lee, 2014). As Carly recounted:

When I was 17 and had surgery ... I think that during that period ... you kind of find this new fire and love for the sport, while you're not able to do it. I think that was a big mental switch for me. Because I matured in that time. I was 17 and I was at the stage where you start to make your own decisions, and I was off and really had to think about what I wanted out of the sport and what goals I still had. And I think from that point, I really started to become more self-driven and realized that I did have all this fire. It sounds funny that this didn't happen until that point.

Carly's experience confirms that puberty is a time during which the coincidence of growth and intense training increases injury risk (e.g., Bloom, 1985; Cassas & Cassettari-Wayhs, 2006; Kolt & Hume, 2004; Kolt & Kirkby, 1996, 1999; Russell, 2013; Schubring, Bub, & Thiel, 2014). Her experience, however, counters the common assumption that training breaks jeopardize the perceived short career length (Eagleman, Rodenberg, & Lee, 2014). To the contrary, the time Carly had away from sport generated positive reflection and allowed her to develop a horizon for independence (for similar findings, see Barker et al., 2014), a disposition that a number of scholars have suggested is crucial for optimal WAG performance (Lavalée & Robinson, 2007; Miller & Kerr, 2002). This is not to say that injuries should be welcomed, but that time away from WAG, for whichever reason, can generate positive dispositional learning.

With regard to *individual factors*, the interviewees felt that genetic predispositions facilitated transitioning through puberty. What the interviewees referred to was that they experienced few bodily changes, such as Gina explained:

I feel that I was very lucky with good genes, because when I went through my teenage years and female hormones and everything ... I really didn't develop as much as others.

All interviewees spoke of how “lucky” they were that their bodies were naturally thin and small and did not change greatly during puberty. The interviewees' reference to genetic predispositions reproduces the common assumption that a pre-pubertal body is ideal for

WAG. The lack of bodily changes Gina referred to may also indicate that selection procedures earlier in the gymnasts' careers had specifically sought small physiques. Lastly, this gymnast's late pubertal development supports research that demonstrates the impact of extensive physical exertion, dietary and weight control, and its inhibiting effects on pubertal development and growth (Caine, Bass, & Daly, 2003; Douda et al., 2002; Malina et al., 2013). Regardless and as with injury time-outs, it is not our intention to suggest that any of these practices or the genetic predispositions this study's gymnasts referred to are necessary to prolong WAG careers. Instead, we propose that it should not only be genetically "lucky" gymnasts who can prolong careers, but the strategic development of horizons for/of adult WAG that show gymnasts that they can remain in this sport. For the gymnasts of our study, the factors outlined above supported the creation of this vision. Moreover, with these adult WAG horizons, the gymnasts' learning evolved, which we found to have created four self-driven regulation dispositions.

Self-, body-, relationship- and performance-regulation

The gymnasts' reference to *self-regulation* mainly related to having (re)found passion for WAG. For several gymnasts, finding passion was necessary because of the above-mentioned performance difficulties and injury time-outs or because of having achieved a major athletic goal (e.g., Olympic Games participation). Each of these events is commonly assumed as career-ending, and thus, career prolongation required new horizons for action and horizons of learning. In contrasting their pre-puberty years with those post-puberty, a key shift that the interviewees described was the process of replacing the "coach-directed" horizons they had come to adopt as children (see Carly's statement above). Suni referred to this type of self-regulation as a form of "intelligence":

[Some gymnasts] just do [WAG], because they don't know anything different. But I don't think that goes well for a long time. It doesn't work until you're 25. That's why I think some gymnasts can do WAG for so long. It has something to do with intelligence. When you're intelligent enough to know what you do it for ... If you're really empty-headed, you might have the talent to do it. But after some time, it doesn't work anymore.

This former gymnast deliberately mentioned the importance of developing a horizon of intelligence to understand why she wanted to continue WAG. Sport psychology and pedagogy scholars identify the development of intrinsic motivation as a significant disposition for continued successful performance (Barker et al., 2014; Lavallee & Robinson, 2007; Martindale et al., 2005; Miller & Kerr, 2002).

The learning of self-regulation instilled self-responsibility. Some of the gymnasts described examples of how their new-found independence affected training, as Christine did:

When I was younger, I felt more like I had to do it. But [when older], I enjoyed [WAG] because I knew I could improve myself without being watched and instructed. I didn't need other people to point out my mistakes. You're much more independent... I knew the goals.

The importance of domain-specific knowledge has been noted by Scheider (cited in Martindale et al., 2005; see also Pankhurst & Collins, 2013) and is confirmed by the accounts provided by our study's gymnasts. Carly emphasized the importance of knowing how to be in control:

When older, it's a totally different ballgame. You're completely autonomous and self-driven and that's fun because then you realize that you have a say in your planning and competing.

Gymnasts' ability to think for themselves and have a "voice" has been documented as an important driving force (Lavalée & Robinson, 2007; Stewart et al., 2015; White & Bennie, 2015). Christine and Carly's comments also speak of how self-regulation brought enjoyment. Having fun is a factor that is commonly discussed in relation to child and youth athlete development (e.g., Bergeron et al., 2015; Martindale et al., 2005) but less so for adult athletes. In our study, however, self-regulation was referred to as an important "fun" factor that contributed to the gymnasts remaining in WAG (see also Stewart et al., 2015).

A further disposition that the interviewees referred to as having learned during puberty was *body-regulation*. The interviewees spoke of how this horizon for action included the ability to "know exactly how far I can push myself and when I have to stop" (Christine), "understand what works best for me" (Carly), and "have more care in my body" (Zita). In general, body-regulation involved a careful internal "listening," as Suni and Michelle described:

I always tried to listen to my body. Listening to my inner voice, what's possible and what's not. If I'm 120% sure that I can do [a gymnastics skill], that I'll land on my feet, then I'll do it. Only if I'm 120% sure this is going to work, then I do it.

When I was 10, I had no idea what my body was like, so I didn't know its limits. Now, I'm a lot smarter. . . . I'm able to read my body a lot better . . . when you're 10, you learn to trust the coaches. As you get older [you can make these decisions yourself].

It can be argued here that the gymnasts learned a horizon for self-health care, which research on other elite athletes has also reported (Schubring & Thiel, 2014a). While a gymnast's over-cautious training behavior could be seen to slow down skill learning, we would argue that for sports with intense training and high physical impact, this protective disposition is crucial for long-term engagement.

The interviewees further spoke of how they had adopted *relationship-regulation*. For Carly, this disposition had developed through a three-year period between the age of 16–18, during which she had trained in a context that demanded independence. When she returned to her childhood coach, she and her coach

Totally butted heads because I said: 'No, [your way of coaching] isn't how this goes anymore,' but kudos to [the coach, he/she] figured . . . out that we couldn't work the same way together anymore.

All gymnasts echoed this change in relationship, describing that as they grew older, the relationships with their coaches became that of a "partnership" (Michelle, Zita, Anna) or "a helping" (Maria), "trusting" (Christine), "escorting" (Suni), "respectful" (Michelle), and "mutual" (Carly, Suni) relationship. These descriptions differ starkly from much of the existing WAG literature, which describes the coach–gymnast relationship as authoritarian and abusive (e.g., Barker-Ruchti & Schubring, 2016; Kerr & Stirling, 2012; Pinheiro et al., 2014).

Lastly, *performance-regulation* was referred to as a learned disposition, particularly in relation to training volume, intensity, and content. Specifically, the gymnasts described training for fewer hours, but more efficiently, than when younger. Gina commented as follows:

Now, I don't work out as much, I know exactly what I need to do. I come, I stretch, I condition, I leave. It takes me a maximum of 2 hours a day. That's a long workout. But an hour, an hour and a half, is a short workout, where I just stretch and do [efficiently] what I need to do. The older I get, the less I train.

This finding is significant, as WAG training is generally assumed to need many hours of repetition. The accounts we heard point to how the gymnasts' horizon for training had transformed to be less repetition-driven. As such, they support a number of scholars' suspicions that "deliberate practice," which is defined as entailing "highly structured, effortful, repetitive and non-rewarding activities" (Pankhurst & Collins, 2013, p. 87) and commonly assumed to be necessary over 10 years or 10,000 hours (Ericsson, Krampe, & Tesch-Römer, 1993), is limited (see also Bullock et al., 2009).

Performance-regulation was also described in terms of learning gymnastics skills. Christine provided an example of how her increased understanding of learning gymnastics skills became useful to her:

I think that younger gymnasts don't really know what it takes to reach a certain goal. When you're older, you have done it all hundreds of times, you know how to learn a new [gymnastics skill], how to add that skill to a routine. You're much more independent, you think for yourself.

Christine experienced the horizon for autonomous learning as significant because it made WAG training meaningful (see also Freeman, 1995; Martindale et al., 2005).

In summary, the interviewees' accounts of career extension were possible because a number of contextual, circumstantial, and individual factors facilitated the gymnasts' transitioning through puberty. Puberty did not represent a career endpoint but a temporary phase of learning that had important application for their motivation, health, well-being, and performance. This transition resembled an organic and serendipitous process of events and adjustments that provided gymnasts with opportunities to actively transform their existing horizons for/of child WAG to horizons for/of adult WAG. The becoming this generated included self-, body-, relationship- and performance-regulation, which the gymnasts interpreted as meaningful, fun, and empowering (for similar findings, see Barker et al., 2014; Miller & Kerr, 2002). These effects provided the gymnasts with a foundation to extend their WAG careers into adulthood.

Implications for gymnast development and beyond

In this last section, we build on the theoretical framework we developed at the outset of this article and the findings we presented above to provide implications for gymnast and athlete development. We do this in three sections: Visions of long-term development, quality and appropriateness of TDEs, and learning for continued effective learning.

Visions of long-term development

In WAG, tightly bound body, age, training, performance, and learning ideals coherently normalize a short career timeframe. Our results, however, indicate that gymnasts can successfully prolong their careers into adulthood. Visions for longer and successful careers are thus available and can now be employed to demonstrate that a continuation at the top

level is possible in spite *and because of* puberty. Pubertal development should thus not be feared but rather be seen as a temporary maturation phase that can serve generative dispositional learning. We propose that gymnastics stakeholders (e.g., officials, coach educators, coaches) have an opportunity (and responsibility) to exploit the vision of long-term gymnastics careers because they positively impact gymnast motivation, health, well-being, and performance. Given that scientific literature continuously demonstrates that WAG jeopardizes health, we consider the opportunity to improve this aspect particularly important. To start this transformation, researchers, federation officials, coach educators, and coaches can employ the trend of older gymnasts to critically reflect on contemporary WAG knowledge and, in particular, the career length it prescribes. Such reflection will unsettle deep-seated assumptions and create new understanding that can be employed to (re-)formulate scientific endeavors, gymnast/athlete development policies, coach education documents, and coaches' philosophies and practices. Coach educators should follow suit by running critical thinking exercises for participants to reformulate coaching philosophies (for a similar argument, see Denison & Avner, 2011).

Quality and appropriateness of TDEs

Many sports competition and/or selection systems are stage-based and even age-bound. They prescribe linear progression, which researchers have found to create merciless sporting environments and one-size-fits-all coaching practices that are often abusive (Cassidy, Jones, & Potrac, 2016; Vaeyens, Lenoir, Williams, & Philippaerts, 2008). As a result, athlete development does not allow for the interrupted and episodic development of performance, which is particularly common during pubertal development and causes de-selection (Pankhurst & Collins, 2013). WAG is a sport that is particularly characteristic of stage-based progression and de-selection (Barker-Ruchti, 2011). The data we have presented in this article demonstrate that pubertal development was experienced as a disruptive phase that endangered career continuation. During this phase, the gymnasts' performance did not, or only partially, align with expectation of performance and performance progression. Yet, thanks to more individualized coaching, partnership-like coach-gymnast relationships, and athlete-driven training, but also time-outs to reflect on the meaning of WAG, the gymnasts were able to create a horizon for/of adult WAG. The gymnasts found the independence and self-responsibility these horizons allowed meaningful and enjoyable.

We thus recommend that those responsible for gymnasts deliberately create TDEs that support the pubertal transition phase by allowing time and providing relevant support. Policy documents should give the pubertal development phase special consideration. Selection procedures and result expectations should be loosened. Moreover, regular supportive talks and health checks, as well as freedom to take time out from WAG, could be included in order to provide gymnasts with opportunities to explore their selves, develop independence, renew passion for WAG, and, importantly, minimize injuries. As above, stakeholders, and coaches in particular, should be educated to understand pubertal development and how their support through this transition process benefits gymnasts' motivation, health, well-being, and performance.

Learning for continued effective learning

Our cultural perspective of learning conceptualizes learning as situational and agency-driven. Transitions and serendipitous events are particularly educational, which the gymnasts of our study reported in the form of pubertal development and injury time-outs. We propose that the learning of the self-, body-, relationship-, and performance-regulation the gymnasts reported are effective dispositions that TDEs should instill. This learning, however, should not be left to (only) occur during pubertal turbulences. Rather, stakeholders can strategically instill these dispositions. This learning process should begin when gymnasts enter WAG so that young athletes develop for future learning and performance (Martindale et al., 2005). A number of educational programs are available, and the resilience WAG coaching White and Bennie (2015) examined may be particularly suitable. At present, however, research demonstrates that such thinking is foreign to the majority of WAG coaches. Thus, coach educators, particularly those employed by gymnastics federations, should develop educational materials that prepare coaches for the pedagogical task of teaching gymnasts independence and self-responsibility, particularly in terms of self-, body-, relationship-, and performance-regulation.

The above recommendations for policy development and coach education specifically apply to WAG. They are, however, relevant for other sports. Increasingly more sports are based on early training specialization ideals and intense training expectations during childhood, and many of the problematic practices and consequences reported in WAG have also been found in other sports (e.g., Cushion & Jones, 2006; Johns, 1998; McMahon & Penney, 2012). Thus, we propose that the development of policies and coach education as we recommend above can also support the development of athletes in other sports.

Conclusion

In this article, we have shed light on an entirely new WAG career phase and form of gymnast development that previous research has not captured. Particularly, we have demonstrated how pubertal development is a key transition phase that the gymnasts of this study moved through because of support from stakeholders and circumstantial and individual factors. Importantly, we showed how puberty did not end careers but generated dispositional learning that the gymnasts considered to stimulate their passion for gymnastics, ownership of their health and training, and coach-athlete relationships they thought most suitable for them.

Our theoretical extension of Martindale et al.'s (2005) model of effective talent identification and development with a cultural perspective of learning indicates four areas that TDE scholars should take up in their thinking: First, pubertal development could be identified as a key transition phase. We would argue that athletes from other sports, especially female athletes, may experience this transition in equally impressive and career-determining ways. Thus, puberty should receive more specific attention in TDE science and the athlete development models that are currently proposed. Second, our findings point to the importance of fun. While this criterion is predominantly used for childhood sport settings, enjoyment because of control over self, body, relationships, and training (and thus career) was identified as an important motivational factor. TDE science should ensure that this criterion is included. Third, body-regulation in terms of

self-health care has emerged as a disposition that TDE thinking does not refer to. Our findings demonstrate the importance of such “smartness,” and we propose that in addition to mental, physical, and sport-specific skills, TDEs should instill “body skills” as well. Fourth, our theoretical perspective conceptualizes that it is not only culture that shapes individuals but also individual sense-making and actions. Our findings demonstrate how the study’s gymnasts did this by regulating much of their selves, bodies, relationships, and performance post-puberty. This agency was described as meaningful and motivating and as facilitating career extension. These findings are exciting and offer first evidence of much more positive high-performance WAG contexts. The recommendations we provide here indicate that if WAG organizations, selectors, and coaches become more flexible in terms of the expectations they place on gymnasts, the coach–gymnast relationship, training content, and performance goals, gymnasts can successfully prolong their WAG careers into adulthood.

Some words of caution are warranted. All gymnasts of our study came from traditional gymnastics settings and selection and specialization procedures. The gymnasts acknowledged that these backgrounds provided them with a high level of gymnastics skill and fitness and a suitable work ethic, which they appreciated in their post-puberty career phase. Hence, our findings do not offer evidence of gymnasts developing into top-level athletes without intense childhood training or less authoritarian coach–gymnast relationships. More research is thus necessary to find ways to demonstrate that WAG success is possible with slower and later specialization. Nevertheless, our study demonstrates that the becoming the gymnasts described as they grew older was generative for their selves, bodies, and performance. Arguably, these dispositions are vital for gymnasts of any age. We trust that others recognize the validity of this learning and systematically integrate the teaching of such dispositions into gymnast/athlete development programs.

Note

1. Examples of such older medal winners are Oksana Chusovitina (Germany/Uzbekistan), who won a bronze medal at the 2012 European Championships at the age of 38; Hong Un-jong (North Korea), who won a gold medal at the 2014 World Championships at the age of 25; Rebecca Downie (UK), who won a gold medal at the 2014 European Championships at the age of 22; and Catalina Ponor (Romania), who won a silver and bronze medal at the 2012 European Championships at the age of 25.

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