Risks and Benefits of Youth Sport Specialization: Perspectives and Recommendations

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Of growing concern to sport researchers is the practice of youth sport athletes specializing in sport at a young age. Sport specialization is characterized by year-round training in a single sport at the exclusion of other sport or nonsport activities. The purpose of this paper is to discuss the potential benefits of specialized sport at an early age in light of the potential risks associated with specialized participation. Three areas of consideration are discussed, including motor skill acquisition and performance, potential sociological consequences, and psychological concerns related to high-intensity training of young athletes. Finally, recommendations for further research and practical considerations are suggested for deciding the appropriateness of specialized sport in the training and development of youth sport athletes.

At the recent Atlanta and Nagano Olympic Games, world records and gold medals were awarded to athletes in their early to mid-teenage years. As international-level participants appear to be getting younger and committing to sport at higher intensities, of growing concern has been the decision for young athletes to specialize in sports such as gymnastics, figure skating, tennis, and swimming at an early age (27, 30, 33). Specialization was described by Hill (21) as athletes limiting participation to a single sport, which is trained for and competed in on a year-round basis, and described by Grupe (18) as “the deliberate advancement of systematic training and planned competition . . . with the specific goal of guiding the child, on a long-term basis, to top achievement in sport” (p. 9). Diversification, conversely, is the participation in a variety of sports and activities through which an athlete develops multilateral physical, social, and psychological skills.

A distinction must be made between specializing in high-level programs and participating in a single sport under less demanding circumstances with a focus that includes other nonsport activities. Due to the lower intensity of training in the latter, those athletes may be much less likely to experience the potential consequences discussed below. It is increasingly common for athletes at the high school or college level to commit their time and energy to one sport (41, 42). The focus of
this paper, however, is on children who commit exclusively to a sport during the early to middle elementary school years (ages 6–12).

Explicit support of specialization is scarce in the youth sport literature, and several sports medicine and exercise science federations have discouraged its practice. The International Federation of Sports Medicine (24) position statement on training in children declared that “this intensified training has no physiological or educational justification” (p. 23). Similar statements were made by the New Zealand Federation of Sports Medicine (15), European Federation of Sport Psychology (14), and World Health Organization (49). Further, the American Academy of Pediatrics (1) proposed that children be allowed to try a variety of sports and that “unstructured free play should be encouraged to enhance enjoyment of sports, as well as promote spontaneity and creativity” (p. 293). Others have equated the encouragement of such behavior as child abuse (33).

Nonetheless, evidence of a “catch them young” philosophy exists in a trend toward earlier and more intensive specialization at the youth sport level (12, 30, 46). For example, Hill and Simons (23) reported that 72% of high school athletic directors perceived increased rates of specialization over a 10-year period, with 61% predicting further increases (as opposed to a predicted 15% increase in diversification). Starkes, Deakin, Allard, Hodges, and Hayes (40) described a general agreement among elite-level figure skating coaches that “the earlier the starting age, the better, with 8 being the latest age to begin skating and have a hope of success” (p. 94). With the media exposure of recent Olympic athletes such as swimmer Amanda Beard, gymnast Dominique Moceanu, diver Fu Mingxia, and figure skater Tara Lipinski, all of whom attained world champion status before the age of 15, early specialization is frequently glorified to millions of children who aspire to do the same.

What is it about specialization that leads coaches, parents, and athletes to believe it is advantageous, and leaders of sport organizations to dissuade it? Information on its potential benefits and risks would help practitioners decide if such behavior is deleterious to the overall development of young athletes. The following is a discussion of the practice of specialization from a skill acquisition and motor performance standpoint, of related social and psychological concerns, and recommendations regarding its appropriateness in young athletes.

Skill Acquisition and Motor Performance Perspective

Perhaps the greatest and most obvious benefit of specialization is the acquisition, development, and proficiency of motor skills related to success in a given sport. An athlete who practices a skill or set of skills with increased frequency and duration, considering he or she does so in a scientifically appropriate manner, may become more proficient at the skills than one who practices them periodically and irregularly, as may be the case with diversification. With the relatively short career of most athletes and a perceived finite amount of time with which an individual can reach peak physical performance, many athletes and coaches believe that it is foolish not to specialize.

Many adults believe that if involvement in organized sport is not begun by age 7, an athlete will sufficiently lag in skill execution, such that future performance accomplishment is unlikely. Successful performance of motor skills as a result of specialization has several consequences, most notably the potential for
increased recognition and upward mobility (23); attainment of varsity, elite, or professional level status (22); a college scholarship (37); or a trip to the Olympic Games (33). Athletes at the highest levels of performance have presumably competed specifically for years at the exclusion of other activities with the goal of reaching that pinnacle.

Ericsson, Krampe, and Tesch-Romer (13) have proposed a theoretical framework to explain the acquisition of expert performance in a variety of domains (including music, science, the arts, and sport) as a result of a minimum 10-year commitment to an activity. Characteristics of deliberate practice include full concentration on the task, a lack of inherent enjoyment in the activity (in that an individual would not otherwise engage in practice for reasons other than improved performance), and the direction of a coach to expedite learning (13).

Expert performance is hypothesized to result from a period of preparation in three phases. The first phase begins with an introduction to the activity, followed by formal instruction; during the second phase, the individual increases practice time and ends in a decision to commit completely to the task; the third phase consists of full-time involvement in the activity (13). Individuals at an earlier starting age are hypothesized to attain a higher level of performance than those who train equally hard but commit at a later age. Research in the sport domain has provided preliminary support for the theory (19, 40).

While several concepts of the theory of deliberate practice may apply to those considered “experts” in a particular activity, concern is raised when attrition rates in sport are considered, in that elite athletes represent a minority of the participants in the U.S. (34). Is it logical or even ethical to promote specialization to the approximately 98% of young athletes who will never reach that status? Moreover, it has not been definitively established that specialization is an accurate predictor of long-term success. Kaplan (25) argued, “Performance at one age in childhood has been found to be an unreliable predictor of performance even 2–5 years later. Furthermore, varying rates of secondary maturation create the well-known development phenomenon of the early and late maturer” (p. 88).

Studies from the former Soviet Union, in which early specialization was widely practiced, have provided evidence against its efficacy. Nagorni (see 6) found that only a minority of Soviet athletes from single sport backgrounds were able to improve performance later in their careers and that most diversified athletes attributed success to a multisport background. Harre (see 6) reported that although athletes who specialized early in their careers experienced quick performance improvement, they attained their best performances by age 16, then performed much less consistently and quit their sport sooner than those whose training programs were diverse. Finally, Barynina and Vaitsekhovskii (4) found that Russian age-group swimmers who specialized at later ages advanced at a greater rate than those who did so earlier and declared that early specialization had no performance-related advantages.

Specialization, in fact, may potentially limit overall motor skill development, which has implications for long-term physical activity patterns upon retirement from competitive sport. A swimmer, for instance, performs a skill horizontally for hours; a soccer player is taught not to use his or her hands; an ice hockey player’s feet rarely touch the ground. Will these athletes’ skills be limited, thus limiting their ability to perform lifetime fitness activities other than those they know best? The athlete’s lack of general athletic skills (perceived or otherwise)
may inhibit the likelihood of participation in alternate activities, with one consequence being compromised long-term health.

**Sociological Perspective**

Specialization requires a commitment not readily found in alternative activities in which children participate. Athletes are taught that a total commitment of time, energy, and emotions is needed to succeed, which often comes at the exclusion of other developmental aspects of their lives, including school, family, and peer involvement. To what extent is social development enhanced or hindered in highly committed athletes?

Sport is considered an excellent environment for children to develop cooperative skills, prosocial behaviors, and close relationships (14), and some of the most frequently cited reasons for sport involvement are social in nature (2, 45, 47). Peer and group interaction is a recognized and promoted characteristic of sport participation, even at advanced levels. For instance, Baxter-Jones and Helms (5) found that among athletes from the sports of gymnastics, soccer, swimming, and tennis, participation did not hinder social development, while Coakley (11) hypothesized that under certain conditions, sport can be a means by which children develop supportive relationships.

A less favorable relationship between high-level sport and social development is also proposed, especially when considering demands specific to many specialized programs. Rowland (33) stated that “the hours of intense training might interfere with normal social relationships, development of self-concept, and educational opportunities is intuitively reasonable” (p. 199). Athletes who devote most of their time to training may suffer from “social isolation” (44), lack opportunities for social growth, and feel “socially handcuffed” by training constraints (17). The rigorous schedules of many year-round sports include training that may exceed 30–40 hours per week, in addition to frequent weekend competitions and associated travel time. Social contact outside of school, therefore, is largely limited to the athletes who train together, and the interactions that occur in high-level sport during training are minimal.

Among athletes on a team, a social subculture is established in which its members share similar values, beliefs, and attitudes (9). Athletes identify with these behaviors and expectations and base their self-concept on the extent to which they are accepted by other members of the group. Practices common among specialized sports as a means of legitimizing an identity as a committed athlete can be harmful, especially in instances in which athletes adopt unhealthy weight control methods in sports that emphasize physical appearance, such as gymnastics, diving, and figure skating (9). An athlete in a specialized sport may also develop an even more narrow identity than multisport athletes, perhaps because it may be necessary for those athletes to adhere to an exacting schedule (7). A restricted identity may be detrimental in many ways, particularly if the athlete suffers a career-ending injury, is cut from a team, or retires from sport (3, 7).

Through in-depth interviews with adolescent athletes, Coakley (10) found that highly accomplished athletes who dropped out of sport did so because of “a constrained set of life experiences leading to the development of a unidimensional self-concept” (p. 276). As an athlete increases involvement in a single sport, opportunities for social interaction outside that sport may become less likely. Gould et al. (17) explained this consequence as having a “three pronged effect”: (a) a
decrease in an ability to combat competitive stress with social support; (b) a reduction in enjoyment in the sport; and (c) an increase in the attractiveness of nonsport opportunities in which the individual could interact with friends. More empirical evidence is needed to support these claims before making generalizations about the socialization of specialized athletes.

**Psychological Perspective**

Of serious concern among pediatric sport science researchers is the impact of high intensity sports on the psychological development of children. Through properly structured sport programs, children have the opportunity to experience enhanced self-esteem and self-perception (49). However, when the volume, repetition, and pressure that so frequently accompany specialized training become excessive, these possible benefits are probably negated. Two major psychological concerns related to the experience of children in specialized training programs include youth sport withdrawal/burnout and the over-involvement and expectations of parents and adults in youth sport programs.

Withdrawal from sport becomes a concern when the reasons cited by its participants are negative and a result of the system in which they compete. Withdrawal may certainly be what McPherson and Brown (29) referred to as a "normal occurrence for young people as they experiment with various roles and activities during adolescence" (p. 280) and choose between sport and nonsport choices. However, others withdraw when the benefits of participating are outweighed by the competitive emphasis of a program (31), a pressure to win (29), and time constraints (26). Although these factors are present in programs with athletes who have diversified, they may be exacerbated in sport programs in which training occurs on a year-round basis.

Perhaps the most salient consequence of high-level sport commitment is the possibility an athlete will burn out of sport prior to the time at which peak performance is realized. An intense dedication to sport is encouraged by coaches who want to see an athlete reach his or her potential and lauded by proponents of sport who believe it will build character and discipline in areas outside of sport. Despite its positive portrayal, a concentrated focus on sport and an involvement in numerous hours of preparation frequently results in athletic burnout.

Burnout has been referred to as "the long-term end result of emotional and/or physical exhaustion" (20, p. 399) and occurs when "a previously enjoyable activity becomes an aversive source of stress" (38, p. 39). Although other definitions and descriptions exist and the exact nature of the phenomenon is unclear, an inclusive review goes beyond the scope of this paper. However, the above description is most appropriate because it is particularly reflective of research on athletes in specialized sport environments. When the decision to specialize is made, an athlete anticipates considerable performance improvement and progression to an elite level, and therefore trains enthusiastically in pursuit of those goals. As improvement follows, an athlete will enjoy mastering the skills of the sport and the ensuing sport success. Yet as training demands increase, an athlete applies further physical and emotional effort to meet them; if the demands are perceived to be excessive, the athlete may withdraw from the activity (38).

General characteristics and symptoms of burnout have been described in recent youth sport literature. Gould (16) identified environmental characteristics related to
burnout as extremely high training volumes and time requirements, demanding performance expectations (self- or other-imposed), and continual competition; personal factors such as perfectionism and a singular focus on athletic involvement were also cited. Gould et al. (17) identified several characteristic patterns of burnout that included logistical factors (time demands, overwhelming focus on sport), social concerns (lack of social life, lack of those they could relate to), and psychological considerations (emphasis on rankings and going professional, scholarship pressure, lack of fun, an interest in other activities).

The notion that burnout is a result of an inability to deal with competitive stress has been challenged by Coakley (10), who stated that typically, "intervention is based on the ideological assumption that the social contexts in which young athletes live are fundamentally fair" (p. 272). Rather than considering burnout a personal failure, Coakley (10) called for a change in the organization of high-level youth sport programs and the conditions in which athletes train and compete. By altering the sport environment, young athletes may be at a lower risk of burning out or dropping out of competitive sport.

Parental involvement is also commonly associated with specialization. Few, if any, youth sport programs would survive without the instrumental support and volunteer time of parents committed to providing positive opportunities for children. It is not unreasonable for a parent to wish success for a child in sport, especially if the parent perceives athletic accomplishment as important. Certainly, attrition rates would be much higher in youth sport without the support and encouragement of dedicated, well-intentioned adults. Nonetheless, support and encouragement have limits, too, and parental involvement often becomes excessive, especially when adults see specialization as a means for a child to advance socially or economically.

Excessive involvement is inappropriate primarily because the structure of youth sport is often organized around the values and expectations of adults (29), which are quite different from those of children. While adults value the achievement outcomes of specialized sport participation, children do not place the same importance on external rewards, nor is it likely that these outcomes are enough for a child to choose involvement in a sport at the relative costs involved, such as moving long distances and leaving family to train with a particular coach.

Characteristic of this involvement is "achievement by proxy," in which an adult lives vicariously through a potentially successful athlete, making decisions based on his or her own needs, not those of the child. Smoll (39) referred to this concept as the "reversed-dependency trap," where a parent identifies with a child to the extent that his or her self-worth depends upon the success of the child. Children recognize this in the form of unrealistic expectations, with additional pressure to remain involved in sport for fear of disappointing parents who have sacrificed on their behalf (12, 43).

Many underlying reasons have been proposed for this behavior. The costs of club membership, equipment, travel, and sometimes housing for an athlete to specialize with a high-profile coach or at a particular facility are extreme. Coakley (11) and Siegenthaler and Gonzalez (37) suggested that parents consider their support an "investment," thereby urging a child to participate at a level that may accelerate skill development and result in a perceived advantage over those peers who choose a more diverse background. Perhaps, also, the parent is a former athlete who never attained his or her own aspirations before either voluntarily or involun-
tarily leaving competitive sport. Adult control in sport often results in elevated competitive anxiety (8, 35, 48), decreased enjoyment (8, 17, 36), low enthusiasm and self-determination (32), and guilt about costs of participation (11, 43) for the young athlete. Each of these consequences reduces the chance of immediate and long-term success, yet more importantly, the significance is that of a negative experience in and possible long-term aversion to sport.

**Recommendations for Youth Sport**

For many reasons, in which the potential risks outweigh the potential benefits, specialization at an early age is difficult to endorse. Therefore, the following recommendations are given as possible methods of changing the current structure of specialized sport participation even for those children with advanced skills and potential for future success in a given sport.

1. The number of athletes who choose to specialize is largely unknown. While youth sport participation rates have been estimated between 20 million (45) to as many as 35 million (46) annually, those numbers merely reflect rates of participation in all sports and may include the same child participating in multiple sports (28). Demographics are thus scarce, and obtaining such information should be a priority for youth sport researchers. In addition, research should be conducted to more accurately determine the extent to which specialized sport is potentially beneficial or detrimental in light of the physical, social, and psychological considerations discussed above.

2. Most likely as a result of earlier maturation in girls than in boys, specialization appears to be more of a concern for female athletes. Sports that are encouraged for girls prior to the onset of puberty often involve high risks of eating disorders, amenorrhea, and developmental and overuse injuries as a result of training. As such, female athletes should be encouraged to participate in a variety of sports at an early age and be educated on nutritional, developmental, and social issues before and during sport participation in adolescence.

3. Sport governing bodies should establish minimal age limits that reflect not only chronological but maturational age of the individual athlete. The International Olympic Committee, for example, has recently raised the minimal age standard for Olympic competition from 14 to 16 in the sport of gymnastics. More importantly, parents and coaches of young athletes must take a more active part in deciding when a child is mature enough to understand the competitive process and demands of specialized sport programs.

4. No sport program should restrict the diversification of physical skills or social development of athletes under the age of 15. The child must also be permitted the freedom to choose programs that are less intense and allow for the participation in other sport and nonsport activities without the associated guilt sometimes experienced by talented athletes who are pressured by adults to remain in a sport.

5. When working with young athletes, coaches and sport administrators must stop attempting to model youth sport programs after elite or professional organizations. What is beneficial for, or required of, adult athletes can certainly be damaging to younger participants. The characteristics of professional and elite-level sport depicted in the popular media are not the characteristics of sport that millions of children are involved in yet are usually the basis by which many youth sport coaches
attempt to train and develop their teams. It is essential to distinguish those differences and limit their application to the developmental readiness of athletes on youth sport teams.

6. Coaches and parents must understand and plan for long-term periodization of training. The phrase “a champion cannot be made overnight,” while taught to athletes to ensure adherence and loyalty to a demanding schedule, ideally is the guiding philosophy by which a long-term training program is structured. Such a program should allow for appropriate training breaks crucial for physiological and psychological recovery from training, at which time an athlete could balance complete rest from the sport with participation in other sports or activities at a lower level of intensity. When a child reaches an age in which he or she is physiologically and psychologically mature enough to handle increased training loads, specialization at that time may be justified to optimize the positive adaptations accompanying the advanced intensity and duration of training.

Most importantly, at the center of periodization should be the needs and wants of the young athlete and the incorporation of other important variables into a training season, such as educational and social opportunities outside of sport. Under these conditions, adolescent athletes have an optimal chance of attaining athletic success under the proper physical, social, and psychological development afforded to them through sport.

References


