CLINICAL REPORT Guidance for the Clinician in Rendering Pediatric Care

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Organized Sports for Children, Preadolescents, and Adolescents

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Interest and participation in organized sports for children, preadolescents, and adolescents continue to grow. Because of increased participation, and younger entry age, in organized sports, appropriate practice, game schedules, and content become more important, taking into account athlete developmental stage and skills. Parental support for organized sports in general, with focus on development and fun instead of winning, has emerged as a key factor in the athlete's enjoyment of sports. Schools and community sports organizations who support multiple levels of sport (eg, recreational, competitive, elite) can include more youth who want to play sports and combat sport dropout. This report reviews the benefits and risks of organized sports as well as the roles of schools, community organizations, parents, and coaches in organized sports. It is designed to complement the American Academy of Pediatrics clinical reports "Physical Activity Assessment and Counseling in Pediatric Clinical Settings" and "Sports Specialization and Intensive Training in Young Athletes" by reviewing relevant literature on healthy organized sports for youth and providing guidance on organized sport readiness and entry. The report also provides guidance for pediatricians on counseling parents and advocating for healthy organized sports participation.

DEFINITION

For this report, organized sport is defined as physical activity that is directed by adult or youth leaders and involves rules and formal practice and competition. School and club sports are included in this definition. Physical education classes at schools do not typically fall into the category of organized sport.

INTRODUCTION

Organized sports participation has become a large part of children's and adolescents' lives over recent decades and has contributed to many positive outcomes. Health benefits from physical activity and organized sports participation may include better overall mental health in young

abstract

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adolescents,[1] higher bone mineral density in adult women who spent more time playing sports at 12 years of age,[2] and a decrease in cardiovascular risk, overweight, and obesity in elementary schoolchildren.[3,4] Participation in organized sports in adolescence is associated with higher physical activity[5] and better subjective health in young adulthood.[6] Remarkably, the strongest predictor of physical activity and higher level of health in male World War II veterans was shown to be whether they played a varsity sport in high school.[7] As discussed in a clinical report from the American Academy of Pediatrics (AAP) that is currently under development ("Physical Activity Assessment and Counseling in Pediatric Clinical Settings"), childhood skills developed in organized sports, such as rope jumping, kicking, and throwing, are associated with better cardiovascular fitness, both in the short-term[8] and into adolescence.[9] Organized sports participation may aid in the development of physical skills, such as hand-eye coordination, functional movement skills and strength, and academic, self-regulatory, and general life skills. It also may have positive social benefits, leading to both improved social identity and social adjustment.[10]

However, children in the United States may not be realizing the positive effects of organized sport. The United States Report Card on Physical Activity for Children and Youth has reported low grades for overall physical activity and high school sports participation.[11]

There is a small amount of data on the specific effect of organized sports participation on children with special health care needs and disabilities. Adolescents with chronic health conditions were evaluated for their participation in organized sports. Young women with a chronic health condition were found to have similar rates of organized sports participation as controls; however, young men with a chronic health condition were significantly less likely to participate, with time and having an injury or physical handicap as the main barriers.[12]

For youth with developmental disabilities, organized sports participation, particularly length of time involved in the Special Olympics, has shown to improve both psychosocial function and physical fitness.[13] Children and adolescents with neurologic disabilities (cerebral palsy, spinal cord injury, and myelomeningocele) who participate in organized sports are shown to have higher levels of physical activity, social support, self-perceived physical appearance, and self-worth.[14] A study of adults with physical disabilities showed that quality of life was higher in those who participated in adaptive sports than those who did not.[15]

There are physical activity data clearly showing low levels of cardiorespiratory fitness in children with intellectual disabilities; this fitness continues to decline as the child ages.[16] Overall, physical activity rates are shown to be lower in children with developmental disabilities, compared with the general population.[17]

This clinical report replaces a previous AAP clinical report titled "Organized Sports for Children and Preadolescents"[18] and is complementary to the AAP clinical reports "Physical Activity Assessment and Counseling in Pediatric Clinical Settings" (currently under development) and "Sports Specialization and Intensive Training in Young Athletes."[19] This report reviews the benefits and risks of organized sports as well as the roles of schools, community organizations, parents, and coaches in organized sports. Guidance for pediatricians on counseling parents and advocating for healthy organized sports participation is provided.

ROLE OF FREE PLAY AND READINESS

Children learn skills needed for organized sports through active play that is fun and developmentally appropriate (Fig 1). Given the right developmental environment, many of these skills are learned through free play, such as running, leaping, and climbing.[20] Ample opportunity for free play is necessary, especially in the preschool and elementary school years, when the basic skills needed for organized sports are being developed and combined (eg, kicking while running). A program designed to incorporate skill development into free play in kindergartners and first-graders was associated with significant improvement in a variety of motor skill tests; these improvements persisted at a 4-month follow-up.[8]

Motor skill development in childhood may ultimately be important for future health. It has been associated with level of physical activity in older childhood, with those with better motor coordination engaging in more physical activity than those with lesser skills.[21] Skill development during elementary school years may also occur with organized sports. Motor coordination is significantly higher in 6- through 9-year-olds who have consistent organized sports participation compared with those who do not participate regularly or at all.[22]

Children who feel competent in skills required for their specific organized sport have more fun and are more likely to stay in the sport than those who do not.[23] Aspects of readiness to consider are motor skill acquisition, ability to combine those skills, and attention span.[23] Children who are younger than 6 years may not possess sufficient skills and attention span, even for simple organized sports.[24]

ROLE OF SCHOOLS

In the academic year, youth spend much of their waking time at school,

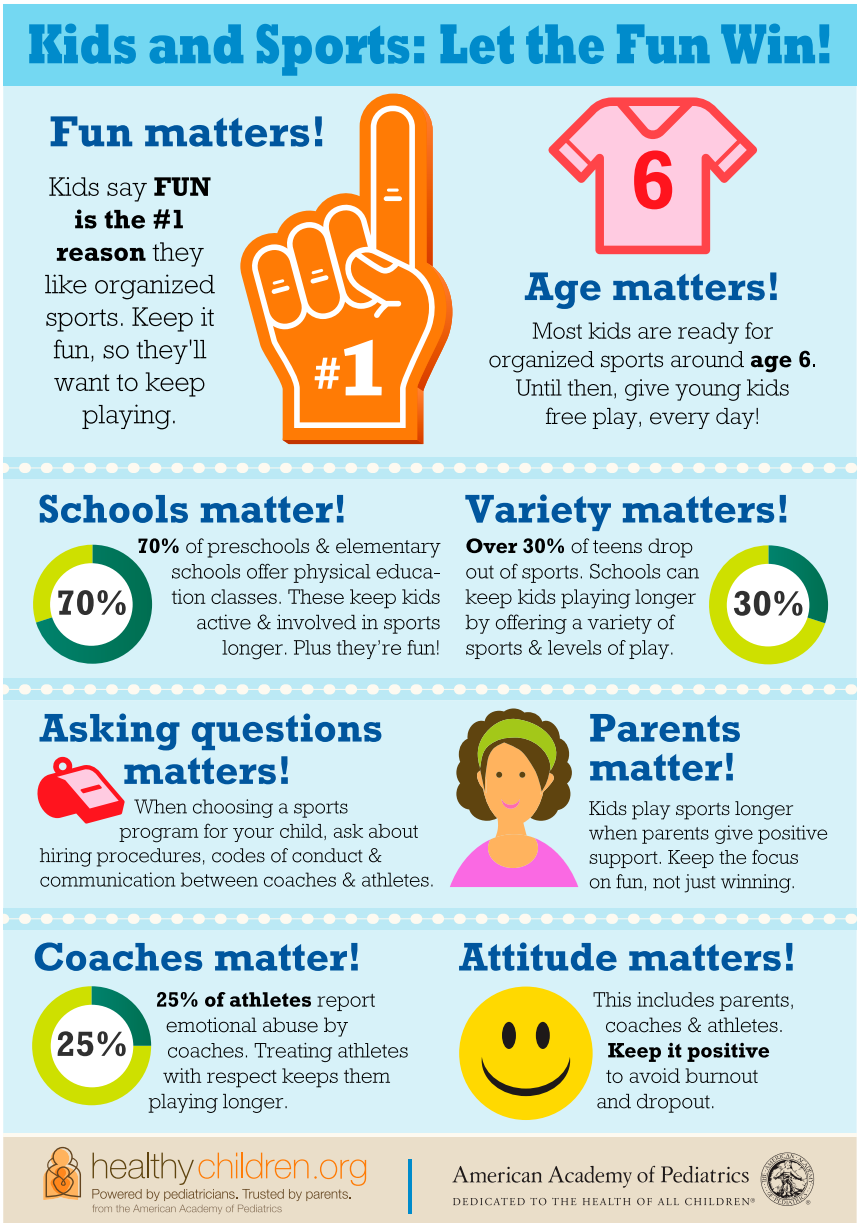

FIGURE 1
Kids and sports: let the fun win!

in a relatively controlled environment. Physical activity improves cognitive performance in school; participation in organized sports outside of school is also associated with higher cognitive performance.[25] Although there is little research on organized sports in schools, given this association, it may be prudent for schools to explore organized sports for students, whether in school or in school-sport organization partnerships.

A large study of urban Canadian youth of low socioeconomic status (SES) showed low levels of overall involvement in organized school sports, with increasing participation among boys over time[26]; participation of girls stayed stable. In the same study, participation in organized sports outside school declined over time. This may represent an opportunity for schools to increase their organized sports options as adolescents age, not decrease them, as is the current trend. However, if increasing physical activity through organized sports is the goal, just increasing opportunity has not been shown to definitively increase physical activity.[27] Elementary school students in "sports schools" (defined as simply adding more standard physical education time with specific development of bodily and sport-specific skills, at least 4.5 hours of physical education weekly), despite having more physical activity during school time than students in "normal schools" (90 minutes of physical education weekly), did not have more overall physical activity.[27] The students decreased their involvement in leisure-time organized sports, offsetting the increases they saw in physical activity at school.

In the School Health Policies and Programs Study, researchers identified "competence in motor skills and movement patterns" as a goal of most schools' physical education programs.[28] Less than 70% of schools described achieving that goal, and in an era of decreasing prevalence of physical education programming during the school day, school-based organized sports offers another resource to meet such goals.[28,29] As schools focus less on motor skill development and assessment, this may be a missed opportunity to expose young children to motor skill training and to identify children who are not accomplishing expected skills.[29]

There is some evidence of school-community partnerships that increase organized sports participation. A program that provides after-school soccer, creative writing, and service learning experiences (partnering with local elementary schools) slightly

increased moderate to vigorous physical activity (MVPA) in overweight and obese youth.[30]

ROLE OF COMMUNITY ORGANIZATIONS

As the level of competition in organized sports leagues increase, those who do not desire to compete at a higher level may simply drop out of sports.[31] A study indicated that girls who do not become involved at a young age (<8 years) will likely not become involved as they get older, but boys may join sports in adolescence, even if they are not involved earlier.[31] Because some health benefits are seen with any organized sports participation, community offerings for girls and boys at multiple levels of competition could support greater participation. The business model of most community youth sports organizations has drifted toward supporting higher and higher playing levels (eg, "elite" levels). Expanding programming to all levels for all ages would create more opportunities for more athletes and potentially support financial health of the organizations.

From preadolescence through adolescence, a steep decline in physical activity is seen in girls, culminating in little physical activity by the end of adolescence, outside what is mandated at school.[32,33] This affects African American girls more than it does white girls, shown in the National Heart, Lung, and Blood Institute Growth and Health Study.[32,33] Community organizations that engage in organized sports management, partnering with schools, could focus on improving physical activity in girls, particularly if they start at a young age.

A known correlate of organized sports participation is SES. A study indicated that participation for both sexes increases as SES level increases, and those with higher SES engage in higher levels of physical activity in high school and young adulthood.[34] A barrier to organized sports participation is affordability[35]; organizations that provide low- or no-cost options may attract a higher number of low-SES youth for activities. Another barrier is transportation home from after-school activities, as demonstrated in a study of urban adolescents in after-school programs.[36] The Aspen Institute's Project Play advocates for the revitalization of in-town leagues to close gaps between organized sports participation in high- and low-SES areas.[37] Strategies to remove barriers to sport participation for families with low SES are making parents aware of existing funding opportunities, increasing funding opportunities or subsidies, and providing ways for parents to volunteer in exchange for lower fees.[38]

The average age of entry into organized sports is decreasing. To increase engagement and long-term participation, administrating organizations will need to tailor game and practice schedules and content to the appropriate child developmental level.[39]

In addition, the community youth development (CYD) framework has been proposed as a successful model to increase the benefit of organized sports through community organizations.[40] This framework includes youth in planning their organized sports activities and using their skills to contribute to the health of their community while building on participants' strengths and recognizing areas of potential growth. The basis of CYD includes addressing young people's sense of belonging, sense of mastery, and sense of generosity and mattering, culminating with the opportunity to make a difference in their own world.[40] One example of a program using CYD elements is Play it Smart, a National Football Foundation program that focuses on transferring sports skills to academics, relationships, and job readiness; this program showed a positive academic effect for participants.[41]

BENEFITS

Before discussing the perceived benefits of organized sports participation, it is worthwhile to note that much of the research on this topic has largely been observational in nature. Therefore, although such research may show statistically significant correlations, it cannot necessarily establish causality or direction of causality.

Skill Acquisition

Early development of motor skills is important because both preschool[42,43] and school-aged children[21,44] with better motor skill performance and coordination are more likely to be physically active. Unfortunately, many children do not naturally learn fundamental motor skills,[45] and low-income minority students may be at particular risk for starting preschool with delayed fundamental motor skills development.[45] Fundamental motor skills, such as running, leaping, throwing, catching, and kicking, are essential for everyday functioning and are important building blocks for higher-level sports skills. One way to help kids achieve motor skill proficiency is through organized sports participation.[24] Youth sports provide a framework in which kids can learn, practice, and develop gross motor skills.[24] Boys participating in organized sports have demonstrated better hand-eye coordination than nonparticipants, although the correlation is less strong in girls.[46] Children consistently engaged in sports also demonstrate superior gross motor coordination[22] via assessment of fundamental motor skills, and organized physical activity appears to have a greater effect on fundamental motor skill proficiency than nonorganized physical activity.[47] Similarly, seventh- and eighth-graders

involved in outside sports demonstrate an association with stronger grip and back strength, along with greater vertical jump and vertical power, when compared with those who participate only in physical education classes.[48] When matched with controls, a group of 12- to 15-year-olds involved in soccer training showed associated gains in leg press strength and shuttle run speed,[49] and kindergarten through eighth-graders involved in T-ball, baseball, and softball demonstrated more advanced throwing development.[50]

Organized sports participation's effect on skill development is not limited to the acquisition of physical skills. There is extensive evidence to show that elite athletes tend to be high academic achievers.[51–55] Both parents and children from low-income families report that improved academic performance is associated with involvement in youth sports.[38] Specifically, sports participation has been associated with increased mathematic performance.[56] Among adolescents, practicing organized extracurricular physical activity is positively correlated with cognitive performance in verbal, numeric, and reasoning domains.[57] In fact, athletes taking part in multiple activities may score higher than those involved in only 1.[57] One explanation for this is that elite athletes report increased use of self-regulatory skills, such as planning, self-monitoring, evaluation, reflection, and effort.[53] More specifically, these athletes reflect more on past performance to learn and, therefore, may benefit more from the time they spend on learning.[58] Snyder and Spreitzer[59] postulate other reasons that school sports participation may enhance academics, including increased interest in the school, desire to maintain eligibility, heightened sense of self-worth, others (parents, coaches, and teachers) taking a personal interest in their classroom performance, and the hope of participating in college athletics. Furthermore, effective time management skills are essential to balance both sport and school commitments, and research shows that athletes may use their free time more efficiently than the typical adolescent[52,60] and spend more time on homework.[55] Athletes tend to be goal oriented and problem focused.[51,60] It stands to reason that these attributes carry over into the educational realm and contribute to the academic success and higher graduation rates reported in athletes compared with nonathletes.[61,62] Additionally, it has been shown that there is an association of athletic involvement with plans to attend college[63,64] and that a greater percentage of high school athletes go on to college, compared with their peers, even when controlling for SES.[55,59]

The development of life skills, defined as skills that are required to deal with the demands and challenges of everyday life,[65] is also associated with sports participation. Life skills are important predictors of future well-being, academic performance, and job satisfaction.[66] Coaches may recognize the importance of teaching nonathletic skills and values and prioritize the personal development of their athletes.[67–69] Parents use sport contexts to reinforce concepts like sportsmanship and personal responsibility, and both parents and coaches use sports to emphasize work ethic.[70] Athletes report learning experiences related to self-knowledge and emotional regulation, taking initiative, goal setting, applying effort, respect, teamwork, and leadership.[71–73] In 1 sample of high school students, athletes demonstrated significantly greater leadership ability than their nonathletic peers on the basis of scores from a standardized leadership ability test.[74] The sporting environment is also rich in feedback and instruction and is highly goal oriented, all of which may further the development of self-regulatory life skills.[58] In a recent systematic review of sports programs serving a socially vulnerable population, authors made the correlation that at least 1 life skill improved in participating youth in each study.[66] In low-income families, both parents and children identify emotional control, exploration, confidence, and discipline to be benefits associated with youth sports participation.[38] Not all programs appear to be created equally, however. Table 1 lists characteristics of a well-designed youth sports program.[66,75]

Social

Involvement in sports, particularly as a member of a sports team, may help youth to develop psychosocially and help form their social identity. Participation in organized sports is strongly associated with a positive social self-concept.[64] The team environment provides a setting for athletes to bond socially, identify with peers, and engage in personal growth and development.[76] It has also been correlated with enhanced perception of social acceptance.[77,78] Organized sports participation allows kids to work with others to achieve goals and provides an opportunity for peer interaction and for participants to learn social skills.[70] Athletes score higher on social functioning measures,[79] and high-level athletes, in particular, report significantly superior general self-concept and better peer and parent relations than nonathletes.[52] In a systematic review of the social benefits of organized sports in children and adolescents, researchers associated involvement in sports with better social skills.[10] There is evidence that such benefits may be long-lasting because a longitudinal study of sports participation in 10th grade was associated with less social isolation later in life.[62] Because organized sport programs take place in a social setting, they may provide opportunities to develop such skills as communication, conflict resolution,

TABLE 1 Characteristics of Well-Designed Sports Programs

- Positive youth-coach relationships
- Coaches who encourage kids to deal with challenges that occur during activity
- Both recreational and competitive environment
- Athletes participate in multiple sports instead of the requirement that they play only 1
- Kids have a sense of belonging to the program
- Life skills educational element
- Athletes develop skills valued by future employees:
  - Volunteering
  - Commitment to team building
  - Acceptance of rules
  - Tolerant attitude toward cultural diversity

and empathy.[66] Sports participation allows youth to experience community integration and positive intergroup relations while increasing social status and facilitating social mobility.[78,80–82] In fact, both boys and girls identify sports participation as one of the most common avenues to achieve social prestige and popularity in high school.[83] Additionally, organized sports experiences may foster citizenship, social success, positive peer relationships, and leadership skills.[81]

Social interaction is one of the most commonly reported advantages of organized sports[10] and brings together people from varied backgrounds who might not otherwise meet.[84] In children from low-income families, making new friends and learning teamwork and social skills are perceived benefits of youth sports participation.[38] Parents of Special Olympians report increased social competence and more friendships for their children, relative to others with developmental delay.[13] In a study of elementary school students, involvement in organized sports has been associated with a particularly positive effect on shy children, revealing that sports participation was positively associated with social adjustment and that this population reported significant decreases in social anxiety over time.[85] Similar findings have been confirmed in an evaluation of social anxiety in Swiss elementary schoolchildren.[86] Sports participation can help adolescents as well. Those with continuous involvement in sports activities have more friendships after the transition to high school, and female athletes experience less loneliness and social dissatisfaction during this time.[87]

Psychological

It has been well documented that sports involvement has an overall positive effect on mental health in kids of all ages. Relative to other activities, sports help develop emotional regulation,[72,73] and both parents and kids report that better emotional control and exploration are benefits of athletics.[38] Athletes report higher scores on mental health scales,[79] and teenagers participating in organized sports report fewer mental health problems and have lower odds of emotional distress compared with peers.[88–90] Members of sports clubs show greater stress resistance and have a lower prevalence of psychosomatic symptoms.[91] Sports have been inversely associated with depression in athletes, and fewer depressive symptoms and higher confidence and competence are some of the most commonly associated positive outcomes of participation.[10,77] More athletic adolescents appear better adjusted, feel less nervous and anxious, and are more often full of energy and happy about life. Athletes also feel sad, depressed, or desperate less often than those less involved in sports.[92] The protective effect of sports on mental health is further indicated by the fact that children who drop out of organized sports may experience greater psychological difficulties and social and emotional problems.[93] Sports participation may have a lasting effect on mental health, as well. Involvement in school sports during adolescence is an associated predictor of lower depression symptoms, lower perceived stress, and higher self-rated mental health in young adults.[94]

The beneficial effect of sports on mental health and depression applies to suicide, as well. After controlling for physical activity, team sports protect against feelings of hopelessness and suicidality, and organized sports participation is associated with a lower likelihood of suicidal behavior.[89,95] Furthermore, a longitudinal study of middle school and high school students showed lower rates of suicidal ideation during high school in athletes, compared with those who never played sports.[96] High school athletic involvement also significantly reduces the odds of contemplating suicide in both boys and girls, and athletic participation in adolescence was associated with a lower tendency to attempt suicide.[92,97–99] These findings may be attributed to the capacity of team sports participation to foster feelings of social support and integration.[95]

Another area in which organized sports participation has a positive influence on youth psychological development is self-esteem.[10,55,100,101] More specifically, sport club activities have a positive influence on the development of self-esteem, a finding that occurs earlier in girls than in boys.[91] This effect may be, at least in part, related to self-perceived athletic competence in this cohort.[78,101] Organized sports participation has been positively related to self-assessments of physical appearance and competence and physical and general self-esteem in both adolescent boys and girls, along

with enhanced body image and a lower likelihood of body dissatisfaction.[77,78,92,102] In girls, team sport achievement experiences in early adolescence are positively associated with self-esteem in middle adolescence,[103] and earlier sports participation in girls correlates positively with self-esteem in college because it can foster physical competence, favorable body image, and more flexible attitudes about what it means to be female.[100] Organized sports programs can also help at-risk youth improve self-esteem, self-concept, and temperament.[104,105] Similarly, Special Olympics athletes demonstrate improved self-esteem and confidence, according to parent surveys.[13]

Emotional status seems to be related to the amount and intensity of involvement in sport. Athletes partaking in a greater number of organized sports, or with more hours or increased frequency, report lower levels of emotional problems, show lower depression scores, and have better feelings of well-being, respectively, compared with those with less participation.[10,106–108]

Physical Health and Weight Management

Given the epidemic of obesity and all of its accompanying medical conditions, it is important to find ways to keep kids physically active. Organized sports participation is 1 tactic to accomplish this. There is substantial association with organized sports involvement and higher levels of energy expenditure and physical activity, including MVPA.[109–119] Organized sports participation is also strongly correlated with better cardiovascular fitness in children and adolescents,[47,115,117,120] including endurance, speed, strength, and coordination.[121] On fitness tests, fifth-graders participating in recreational sports perform significantly better on measures of upper body strength and upper and lower body power than their peers.[122] Special Olympics athletes also have increased fitness, aerobic capacity, overall fitness, and strength, compared with others with developmental delay who are not involved in the program.[13]

Organized sports participation is also associated with young adult physical activity levels and physical fitness.[84,123,124] More specifically, becoming involved in organized sports at an early age may increase the likelihood of a physically active lifestyle in young adulthood,[125] and membership in a sports club during adolescence may predict a high level of physical activity later in life.[126]

The relationship between sports participation and obesity is less clear, with many studies showing no conclusive evidence of a positive correlation between organized sports participation and healthy weight status.[119] However, there is some indication that organized sports may have a role to play in reducing obesity. Early sports participation during kindergarten and first grade is associated with smaller increases in BMI during the adiposity rebound period of childhood,[4] and in elementary school, regular involvement in sports is associated with a lower likelihood of being overweight[120] and lower accumulation of body fat.[127,128] These findings hold true in older children and adolescents, as well. In middle school students, organized sports participation was associated with a reduction in the likelihood of being overweight and obese; participants had a 2% reduction in BMI.[129] Furthermore, parents and children from low-income families report weight management benefits from organized sports participation,[38] and decreased body fat and lower overall weight is correlated with Special Olympics involvement.[13]

Along with the obvious benefits of regular activity, there appear to be other ways in which organized sports participation contributes to overall physical health and weight management, such as healthy eating practices. A survey of fourth-graders suggested that greater sports participation is associated with a healthier overall eating profile, including lower consumption of soda,[130] and organized sports participation has been associated with improved caloric expenditure and reduced unnecessary snacking.[24] Adolescents involved in sports may eat breakfast more frequently and have better overall nutrient intake than their peers,[131,132] and athletes may also be more likely to eat fruits and vegetables and drink milk.*

Organized sports participation may lead to long-term health benefits, as well. Sustained participation in organized sports is associated with a lower risk of developing metabolic syndrome in adulthood.[133] In addition, kids who play ball sports during childhood appear to have a decreased risk of developing future stress fractures,[134] and involvement in impact-loading sports has a positive effect on bone mineral composition, density, and geometry, benefits that may be partially maintained even in those who do not continue participation into adulthood.[135]

Another positive effect of sports participation is the association with lower rates of substance use (excluding alcohol, which is addressed later in this report) and other risky behaviors. It is generally shown in studies that, compared with their peers, teenagers involved in sports are less likely to smoke cigarettes† and marijuana[97,132,136] and are less likely to use cocaine and other illicit drugs.[97,137–139] Both male and female adolescent athletes are more likely to report use of a condom during their last sexual encounter, and girls are less likely to engage in

* Refs 89,97,99,114,130,132,202.

† Refs 91,92,97,107,132,[137],138,[149],203,[204].

sexual behavior in general and report fewer pregnancies.[97,99,140] Finally, surveyed athletes of both sexes are less likely than nonathletes to carry a weapon.[97,99]

Adolescents participating in organized sports report fewer general health, eating, and dietary problems,[88] and athletes report higher scores on measures of general health and physical functioning, along with lower scores on a bodily pain scale, than nonathletes.[79] Given this and the other findings discussed earlier, it is unsurprising that young athletes tend to have higher overall health-related quality of life compared with their peers.[141,142]

RISKS

Burnout and Overscheduling

One concerning trend regarding organized sports participation in young athletes is that of early sports specialization. Sports specialization is the concept of intensely focusing on a single sport, typically year-round, while giving up other sports. Although early specialization may be beneficial in the few sports in which peak performance is often reached before physical maturation is complete (gymnastics, diving, figure skating), in most instances it can lead to more injuries and a higher risk of burnout.[19] In addition to sports specialization, other forms of overtraining; outside pressure from parents, coaches, and teammates; and internal stress placed on the athlete by his or her own self can all lead to burnout.[143–145] Burnout can be thought of as a syndrome comprising emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation.[144] Common signs and symptoms include chronic joint or muscle pain, fatigue, elevated resting heart rate, decreased sport performance, personality changes, lack of enthusiasm regarding athletics, or difficulty completing usual routines.[145] Burnout can be difficult to measure but is thought to occur in between 1% and 9% of adolescent athletes.[144] A full discussion of sports specialization and burnout is beyond the scope of this report but is covered elsewhere, in the AAP clinical reports "Sports Specialization and Intensive Training in Young Athletes"[19] and "Overuse Injuries, Overtraining, and Burnout in Child and Adolescent Athletes."[145] It has been suggested that young athletes participating in more hours of sport each week than their age in years and those spending more than twice as much time in organized sports than in free play are at increased risk of suffering a serious overuse injury.[146] Kids who start concentrated training earlier in life, those who are involved in fewer extracurricular activities, and those with less unstructured play are more likely to drop out of sports[147] and, therefore, will not reap the many benefits of organized sports participation. Having an intense sports focus and its associated time commitment, along with the home schooling or participation in sports academies that often accompanies such training, can foster social isolation from peers and lead to limited social and problem-solving skills. Finally, parent and coach behaviors can adversely affect kids' organized sports experience, with 30% of young athletes reporting negative actions of parents and coaches as their reason for quitting sport.[23]

Risk-taking Behavior

As mentioned previously, adolescent athletes are less likely to smoke cigarettes and use illegal drugs than their peers. However, they are more likely to drink alcohol and use smokeless tobacco.‡ Youth involved in competitive sports have higher odds of reporting first getting drunk at an earlier age (elementary school or middle school) than peers.[148] They are also more likely to engage in binge drinking[149] and drunk driving in high school.[150] Despite lower illegal drug use overall, a recent survey showed that male adolescent athletes are more likely to be prescribed opiate medication and more likely to misuse such medication than boys who do not participate in organized sports.[151]

Some athletes, especially those involved in weight-class sports (wrestling, boxing, weightlifting, and crew), aesthetic sports (gymnastics, dance, and figure skating), and endurance sports, may engage in unhealthy weight-control practices.[152,153] Wrestlers, in particular, report multiple potentially harmful weight-cutting measures, such as overexercising, prolonged fasting, restricting fluid intake, and dehydration techniques.[152,153] Methods of dehydration include saunas and steam baths; spitting; vomiting; use of laxatives, diuretics, and diet pills; and wearing rubber suits while exercising.[152,153] Male athletes are more likely to vomit or use laxatives or diet pills for weight loss,[99] but girls are at unique risk of developing the "female athlete triad,"[154] a combination of low energy availability, menstrual dysfunction, and low bone mineral density. The female athlete triad can be triggered either by purposeful restriction of calories (sometimes associated with an eating disorder such as anorexia nervosa or bulimia nervosa) or simply from inadequate caloric intake to meet energy demands of the sport. These topics are discussed further in the AAP policy statement "Promotion of Healthy Weight-Control Practices in Young Athletes."[152]

Another unhealthy practice among athletes is the use of performance-enhancing substances, such as steroids, human growth hormone, and nutritional supplements. Although the name "nutritional supplement" implies a healthy product, use of such products can be

‡ Refs 62,97,99,136,[137],139,148,149,204–206.

dangerous because they lack regulatory oversight and have been frequently shown to be contaminated with steroids, stimulants, and other impurities.[155] Although consumption of performance-enhancing substances for the purpose of improved appearance is common in adolescents in general, usage appears to be greater in the athletic population[156] to gain a performance advantage. The lifetime prevalence rate of steroid use among adolescents ranges from 2% to 6% and is higher in the athletic population, particularly boys.[156–158] This conflicts with adult data showing a higher prevalence of steroid use in nonathletes.[159] For more details on steroid use and other performance-enhancing substances in children and adolescents, see the AAP clinical report "Use of Performance-Enhancing Substances."[156]

Bullying and Hazing

Bullying is a social issue that is prevalent throughout society, and the youth sports world is no exception. Bullying can be defined as a pattern of physical, verbal, or psychological behaviors between individuals that has the potential to be harmful, is based on an imbalance of power, and includes an absence of provocation.[160] Bullying in sports may be physical, social, or psychological. Physical contact such as hitting, kicking, or pushing or stealing or destroying equipment would be examples of physical bullying. Social bullying may involve isolating, excluding, or otherwise not accepting a player or teammate, and psychological forms of bullying include name calling, rumor spreading, threatening, and humiliating or ridiculing behavior.[160,161] Although there is no difference in the sexes when it comes to victims of bullying, male athletes are more likely to be perpetrators, and athletes of male coaches report higher rates of bullying, compared with athletes of female coaches.[162] Along with disability, sexual and gender orientation are factors that have been identified as risk factors for harassment in sport.[160] Victims of bullying in sports also tend to report weaker connections to peers, and those conducting the bullying report weaker relationships with coaches.[162]

Hazing differs somewhat from bullying in that although it may be humiliating, degrading, or dangerous, it is an expectation of someone joining a group conducted with the intention of increasing commitment to the team or organization.[161,163,164] Hazing may be conducted with or without the participant's willingness to participate.[163] Hazing activities may be physical, such as beating or paddling, branding, head shaving, kidnapping, sexual assault, or being forced to perform feats of physical endurance.[161,163] Other examples include forced alcohol consumption; being made to perform embarrassing acts, including sexual acts; being deprived of sleep or food; or being tied up, confined, or abandoned.[161,163] The incidence of hazing in youth sports varies from 5% to 17% in middle school up to 17% to 48% in high school,[163–165] although some experts believe hazing may be underreported by athletes either for fear of retribution or because they may not perceive certain activities as hazing.[166] Despite the potentially catastrophic outcomes that can and have occurred as a result of hazing, 86% of adolescent athletes report feeling that their experiences were worth it to be part of the team.[164] Because of this, it is up to coaches and team leaders to create an environment in which such behaviors are no longer acceptable.[166]

Parental Influence

Most parents undoubtedly want what is best for their children when it comes to sports. However, some parents do encourage young athletes to participate beyond their readiness or interest or inadvertently create unrealistic expectations for performance, which can cause kids to lose confidence and set them up for failure.[24,167] Pressure from parents who are too controlling in organized sports has been linked to performance anxiety.[168] Parental criticism and high expectations are both factors that have been associated with burnout in young athletes.[81] Additionally, some parents model poor behavior on the sidelines, screaming, fighting, and at times even attacking officials, which can embarrass kids and decrease their enjoyment of sport.[169,170] Negative spectator behavior on the part of parents has been shown to predict negative player behaviors as well.[170]

TABLE 2 Financial Costs Associated With Youth Sports

- Uniforms
- Equipment
- Shoes
- League registration fees
- Facility fees
- Private lessons from coaches
- Camps
- Tournament entry fees
- Travel expenses

Another way parents influence their children's organized sports participation is the amount of money spent to participate (see Table 2). Some families exhaust their savings or sacrifice vacations to pay for organized sports activities.[171] Many parents may view this as an investment, hoping their child will 1 day obtain a college scholarship or make millions of dollars as a professional athlete.[172] Unfortunately, the likelihood of either of these happening is exceptionally small. According to statistics from the National Collegiate Athletic Association, the overall percentage of high school athletes who go on to play Division 1 college football, basketball, or soccer ranges from 1.0% to 2.6%.[173] Furthermore, the amount of money parents spend on organized sports during the middle school and high school years most often exceeds the value of a college scholarship,[174]

even for the rare athlete fortunate enough to obtain one.

Coach Influence (Potential for Coach Abuse)

Although most coaches presumably work with young athletes to help them succeed, coaches also face pressure to win. This pressure may lead coaches to be coercive or punitive, to encourage unsportsmanlike behavior, or to impede their players' social and personal development.[72] Some coaches try to motivate kids by yelling at them, insulting them, or calling them names.[169] Nearly half of children involved in organized sports report verbal misconduct by coaches.[169] Youth involved in sports report higher rates of inappropriate adult (those involved in the activity) behavior than those involved in other extracurricular activities.[72] Coaches sometimes get so caught up in winning that they set a bad example by cheating or fighting with other coaches, parents, and officials.[24] Children and adolescents who observe coaches behaving badly are likely to assume that sportsmanship is not a valued quality.[170] Coaches who primarily place emphasis on winning rather than advancing their athletes' best interests can end up exploiting athletes.[81] Of the three quarters of adolescent athletes who report at least 1 incident of emotional harm during their sports careers, nearly one third implicate their coach as the source of that harm.[175] Not surprisingly, athletes who are verbally intimidated or bullied by coaches often have difficulty focusing on the actual details of the game because they are preoccupied with gaining the coach's approval.[176] Coaches who are more controlling and autocratic and perceived as less encouraging and supportive are more likely to cause athletes to drop out of sports.[81,177] Even if they are not engaging in any malicious behavior, coaches may unintentionally cause harm. Many youth coaches lack adequate training in strength and conditioning principles, emergency management of sports injuries, or basic first aid, which can result in more frequent or severe injuries for youth sports participants.[24] Even worse, some athletes report feeling pressured to play while injured.[24] Punitive exercise (a coach forcing an athlete to perform significant physical exertion often not related to the athlete's sport because of athlete mistakes or performance issues) can be dangerous and is opposed by SHAPE America.[178]

Less commonly, athletes may even be sexually harassed or abused by a coach.[179] In a survey of Canadian adolescents, it was shown that 0.4% experienced sexual harassment and 0.5% were victims of sexual abuse at the hands of a coach,[180] and authors of an Australian analysis reported the prevalence of sexual abuse at a much higher 9.7%.[181] In the Canadian study, an additional 1.2% of athletes admitted to consensual sexual contact with a coach.[180] Although there are no published estimates of abuse rates in US athletes, there have been numerous media reports of coach-perpetrated sexual abuse in, among others, youth tennis, swimming, and martial arts in this country.[182–184] Sexual abuse of a child or teenager by a person in a position of trust (ie, coach) is a felony crime in every state.

TABLE 3 Role of Parents in Organized Sports

- Child's interest determines participation
- Be aware of the child's physical and developmental ability and what skills are needed for the organized sports
- Support fun, learning, and making progress in skill development
- Demonstrate positive support for participation, not for winning
- Support "sport sampling" to develop multiple skills, promote enjoyment, and reduce injury risk
- Be aware that organized sports participation alone may not offer enough physical activity for optimal health
- Support good nutrition and adequate sleep

ROLE OF PARENTS

Parents significantly influence whether their children participate in organized sports and in what environment they do so (Table 3).[185] A systematic review of parental correlates of physical activity in children and early adolescents found that parental support (eg, encouragement, facilitation) is significantly correlated with child physical activity level (including organized sports); studies on whether the parents' own physical activity level influences child physical activity level show mixed results.[185] The child's perception of parental support and positive expected outcomes from organized sports are significantly associated with participation, as is the parental belief of feeling it is important to participate in organized sports.[186] The same is likely true of youth with developmental disabilities. Parents of children with developmental disabilities who believed strongly in the benefit of physical activity reported more physical activity in their children.[17]

Parents' awareness of their own child's physical abilities, developmental trajectory, and interest is helpful when determining when to start organized sports.[24] The age of 6 years has been proposed as appropriate for most children to start organized sports because they would have achieved the skills necessary for basic participation in a variety of activities.[167] Working with their primary health care provider, parents can determine if their child has developed fundamental skills needed for most organized sports. Age-appropriate recommendations for increased physical activity and suggestions for supporting physical literacy are provided in the AAP

clinical report "Physical Activity Assessment and Counseling in Pediatric Clinical Settings."

Positive behavior relating to organized sports participation (eg, empowering, teaching of life skills, supporting fun, and making progress instead of winning) is shown to increase enjoyment and decrease stress in organized sports.[171] The health of the parent-child relationship in general is also important, as shown in studies of junior athletes.[187] Pressure to intensify and succeed (win) in organized sports, while decreasing time with friends, family, and in academics, results in increased child stress and a negative outlook on the sport as a whole. Supporting the positive aspects of hard work, follow-through on commitments, and sportsmanship are shown to be associated with increased motivation for organized sports participation and better parent relationships.[188]

When parents support organized sports participation for their children, they may assume that this participation ensures they will get enough physical activity; however, this may not be true. In several studies on levels of physical activity achieved in organized sports, less than expected MVPA was demonstrated[189]; female soccer players have been shown to get ~20 minutes of MVPA for every hour of game play or practice time in 1 study.[113] In another study, both boys and girls playing in soccer games spent almost 50% of the match time sedentary.[190] Although both boys and girls across a variety of organized sports had more overall physical activity than those not in organized sports, 1 study showed that only the boys were achieving recommended physical activity levels.[111]

In addition, families with children in organized sports have been shown to have higher fast food consumption and fewer meals eaten at home because time in organized sports was prioritized over healthy eating.[191]

Parents are inherently involved in decisions made about organized sports participation, both in the variety (or lack thereof) and intensity and scheduling of sports.[24] There has been much research around sports specialization, injury risk, and burnout from organized sports,[19] and the topic is fully covered in the AAP clinical report "Sports Specialization and Intensive Training in Young Athletes."[19] The current literature suggests that sports specialization is appropriate in late adolescence to decrease injury risk and promote success.[192] "Sport sampling," the concept of participating in multiple sports over childhood and early adolescence, promotes enjoyment while decreasing injuries, stress, and burnout.[193] Encouraging a variety of sports is likely to be beneficial to the young athlete in multiple ways. A recent report from the Women's Sports Foundation associated teenagers who participated in at least 2 different sports with healthier eating habits, more exercise, and better sleep habits, with lower risk of substance abuse.[194]

Parents are essential in creating environments in youth sports, especially in preventing abuse by anyone interacting with athletes, including coaches and medical staff. Parents can ask questions of both schools and youth sports organizations focused on rules of conduct and travel, abuse-prevention training, and reporting.[195] See Table 4 for a parent checklist to prevent abuse in youth sports.[195] A parent-coach partnership in creating a safe environment for sport participation is ideal.

TABLE 4 Creating a Safe Environment to Prevent Abuse in Youth Sports: A Parent Checklist

- Review organization hiring procedures: background checks, interviews, applications, references
- Ensure formal abuse-prevention training is conducted
- Ask about organization codes of conduct, travel policies, and reporting requirements
- Rules of communication between coaches and athletes should be present (social media, texting, e-mail)
- Rules for coach and athlete contact during individual training should be established
- Sport facilities should be well maintained and provide areas for athlete privacy and safety

Adapted from LaBotz M. Creating a safe environment to prevent abuse in youth sports: a parent checklist. 2018. Available at: https://www.healthychildren.org/English/healthy-living/sports/Pages/Creating-a-Safe-Environment-to-Prevent-Abuse-in-Youth-Sports-A-Parent-Checklist.aspx. Accessed April 27, 2018.

ROLE OF COACHES

For youth, fun is named as the most rewarding part of organized sports participation.[39] In a study on the tenets of what comprises fun for young athletes, researchers found being a good sport, trying hard, and positive coaching to be highest rated.[39] Part of "fun" likely includes equal playing time, especially for younger athletes (12 years and younger) and can be a strategy for coaches to keep developing athletes involved.[196]

Design of developmentally appropriate scheduling and practices is important, keeping the focus on fun and engaging the athlete.[40] Recognizing the developmental level of children participating in organized sports is essential to designing skill acquisition and content and length of practices.[167] In addition, recognizing the role of overscheduling and fatigue on injury risk is helpful in designing the time of practices around games and tournaments, purposefully giving the young athlete time for adequate sleep and rest between bouts of physical activity.[197]

Awareness of physical activity content in practices is important; it was demonstrated in the Role of Parents section that assuming organized sports participation will meet physical activity

recommendations for youth may be a mistake.[113,189,190] A coach education program focused on strategies to increase MVPA in basketball was successful in increasing MVPA and decreasing inactive time in practices.[198]

Finally, coaches and related professionals are mandated reporters of sexual abuse in most, if not all states, and should be vigilant about scrutinizing and reporting any such suspicious behavior.

ROLE OF PEDIATRICIANS

Child Evaluation and Guidance for Involvement in Organized Sport

Pediatricians have an important role in educating parents about developmental milestones leading to successful organized sports participation. Pediatricians can help parents connect the child's developmental state and achievement of skills to readiness for specific sports. For example, a 4-year-old child is not likely able to catch well and would not be ready for baseball. However, early motor skill development is important for long-term physical activity and organized sports participation. Appropriate skills can be achieved, for most children, through a combination of free play and purposeful skill development in the context of free play. More on free play can be found in the AAP clinical report "The Power of Play: A Pediatric Role in Enhancing Development in Young Children"[199] and in *Caring For Our Children: National Health and Safety Performance Standards*.[200]

Pediatricians can also reinforce that the interest in organized sports should come from the child, not the parent. Forcing children to participate in organized sports (or any physical activity) is likely to decrease fun in the activity and discourage future participation.[20]

Parental Counseling

There is a positive effect of parental support on organized sports participation.[185] Pediatricians discussing organized sports with their patients and families can address whether youth feel encouraged in organized sports endeavors and whether barriers to participation exist (eg, transportation, finances, parent ability to attend events). Educating parents about ways to show support for organized sports may be helpful in encouraging participation and, therefore, increased physical activity in their children.[186] Special attention should be paid to the physical activity and sport needs of disabled youth, recognizing that this patient population is influenced by the parental attitudes about physical activity. Because organized sports participation may not provide enough MVPA to meet physical activity recommendations,[113,189,190] pediatricians can educate parents about the need to promote physical activity in and out of organized sports.

Finding the right coaching environment for a child participating in organized sports is important, both for short-term skill development and for long-term enjoyment of physical activity and organized sports.[39] Empowering parents with knowledge about positive coaching is an important step for healthy organized participation.[24] In addition, athletes, especially disabled ones, might occasionally have physical, behavioral, or other presentations of abuse at the hands of coaches and may disclose that abuse to a pediatrician, who must then report the abuse.

Pediatricians can ask about and encourage organized sports participation in youth who may not otherwise participate: those with chronic health conditions or those who are developmentally or neurologically disabled. This is important for both the general and disabled youth populations; disabled youth are especially at risk for low fitness from low levels of physical activity. Research on other groups is lacking, but asking at-risk patients about barriers to participation and encouraging organized sports participation are valuable.

Advocacy and Policy

Pediatricians are an important part of their local community and offer knowledge specific to the development of children and adolescents that is complementary to scholastic and other community organizations. Relative to organized sports, the pediatrician is valuable in promoting healthy and safe participation.[201]

Advocacy in Schools

Knowledge about the local community's school guidelines for physical education is important. At the preschool and elementary school level, specific knowledge about motor skill acquisition programming and assessments will allow the pediatrician to promote early intervention in children who are not meeting milestones. Understanding the local school organized sports and physical education options for adolescents can help the pediatrician advocate for a wide variety of options (competitive level, sport, etc) to keep students involved in organized sports.

Advocacy in Community Programs

The pediatrician has needed expertise in advising community organized sports programs on age of start and how to promote fun, successful practices that keep children engaged and interested in sports. Advocating for practice and game schedules that allow for appropriate rest and recovery is also needed.

The pediatrician can work with community organizations to discuss barriers for organized sports in the

community and how to resolve them. Encouraging community organized sports organizations to purposefully address these barriers (eg, affordability, transportation issues, scheduling, accessibility) is vital.

CONCLUSIONS

1. Organized sports participation can be an important part of overall childhood and adolescent physical, emotional, social, and psychological health.
2. Children need daily opportunity for free play to develop motor skills needed for organized sports participation.
3. Supervised motor skill acquisition in preschool and elementary school positively influences long-term participation in organized sports, physical activity, and cardiovascular health.
4. Participation in school-sponsored organized sports, relative to the entire student body, is low. Schools play a role in increasing organized sports participation by offering multiple levels of play at the junior high and high school levels, thereby retaining those athletes who do not desire to or cannot compete at high levels but want to remain involved in sports.
5. Community organizations can promote organized sports participation by identifying and promoting ways to support families with low SES. Pediatricians can be well versed in available opportunities and can use these as an adjunct to physical activity and organized sports discussions in their practices and with community organizations.
6. Parental support for organized sports participation in general and positive support (ie, encouragement, focus on fun and progress instead of winning) are important influencers of whether a child enjoys and continues organized sports. This is true for youth with disabilities as well as for all youth. However, forcing organized sports participation is not likely to have long-term benefits.
7. Parents are essential in creating safe environments in youth sports, especially in regard to preventing abuse. Parents can ask questions of both schools and youth sports organizations about hiring procedures, codes of conduct, and communication between coach and athlete.
8. Positive coaching is an important facet of organized sports. Coaches who approach organized sports with a respectful, development- and fun-focused approach to practices and performance are more likely to have athletes who enjoy and stay in organized sports.
9. Unhealthy attitudes or behaviors on the part of parents and coaches can decrease the young athlete's enjoyment of sports and contribute to burnout.
10. Involvement in sports, particularly as a member of a sports team, is an integral way for youth to develop psychosocially and help form their social identity.
11. Sports participation helps athletes develop self-esteem, correlates positively with overall mental health, and appears to have a protective effect against suicide.
12. Sports participation in some youth who are medically at risk is shown to improve well-being. This improvement in well-being is particularly evident for Special Olympics participation, for children with developmental disabilities, and for children with neurologic disabilities.
13. Youth of all ages involved in organized sports have higher levels of energy expenditure and physical activity than their nonathletic peers, and sports may be an important way to combat obesity.
14. Adolescent athletes appear less likely to smoke cigarettes and use most other illegal drugs but are more likely to consume alcohol and use performance-enhancing substances, such as steroids.
15. Bullying and hazing are common among young athletes, and it will likely be the responsibility of coaches and team leaders to decrease such practices.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
CYD: community youth development
MVPA: moderate to vigorous physical activity
SES: socioeconomic status

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