

The Effects of Adolescent Sports Participation on
Psychosexual, Psychosocial, and Cognitive Development

Daniel Loewus-Deitch

Fielding Graduate University

Abstract

Adolescence is often a tumultuous and challenging period for children, as they discover their sexuality, search for an identity, and learn to think abstractly. Sports and exercise are typically touted for their physical health benefits, but they also can have a significant impact on the psychological development of children. This paper presents an overview of three classic, staged developmental theories: Freud's psychosexual model, Erikson's psychosocial model, and Piaget's cognitive model. It then explores a number of common themes and concepts within the literature that involve adolescent sports participation and the impact that it can have on sexual, social, and cognitive development.

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The connection between physical fitness and a healthy mind has been recognized since ancient times. Both the Greeks and Romans placed a large emphasis on athleticism. The Romans believed that a solid balance must be maintained between the physical body and the mind in order to be successful and function optimally in life (Turp, 1997). Numerous researchers have found that encouraging involvement in youth sports is a proactive way to help prevent adolescent issues such as depression, stress, social problems, and drug use (Eppright, Sanfacon, Beck, & Bradley, 1997). There is typically a great decline in physical activity levels during adolescence (Smith, 1999). Interest and involvement in physical education classes peak in the sixth grade, but this quickly wanes as the child moves through middle and high school. Therefore, adolescence is a particularly important time to help children develop physical competence, athletic skills, and regular fitness habits that they can then take forward with them into adulthood (Krouscas, 1999). As we will discover in this paper, the dynamic nature of sports can also have a significant impact on cognitive, sexual, and social development. Usually this impact is positive, but sometimes it can also be negative, such as in the case of sexual aggression among males who are involved in football or other violent high school sports.

From the mid 19th century through the 20th century, three pervasive developmental psychology theories arose that have fundamentally defined the field in very important ways: Freud's psychosexual development, Erikson's psychosocial development, and Piaget's cognitive development. These staged, theoretical models have informed and inspired the research of many psychologists since then, as they have critiqued, elaborated, extended, and proposed alternative

theories. Such spawned theories include Jung's Spiritual Development, Kohlberg's Moral Development, and James Marcia's Identity Theory.

In all of these staged developmental models, adolescence is a relatively volatile period in which children experience puberty, discover their sexuality, shift their primary focus to peer relationships, and learn to think abstractly. It is also a time where they explore new roles and values, and begin the identity formation process. In this paper, I will present some of the more common themes within the literature surrounding sports participation and adolescent development, within the context of Freud, Erikson, and Piaget.

Freud's Psychosocial Development Theory

Freud was the first major psychologist to come up with a pre-determined, staged theory of development. Freud based each of his stages on a specific erogenous zone that the child becomes primarily focused on to achieve pleasure. During each of these stages, children learn to balance these urges without entirely denying or over-indulging in activities surrounding the respective erogenous zone (e.g. oral, anal, phallic). If a balance is not successfully achieved during a given stage, the child can become indefinitely fixated on this area later in life, and this may lead to the development of certain personality characteristics or behavioral patterns (Heffner, 2000).

From ages 3-6, children enter the Phallic stage, in which the pleasure focus switches to the genitals. In this stage, the child supposedly develops unconscious sexual desires for the opposite sex parent and temporarily feels a jealous rivalry with the same-sex parent. This causes the child to suppress sexual urges throughout the next stage, Latency, which is a relatively calm period (McLeod, 2008b). At puberty, however, the adolescent enters the Genital stage. In this final psychosexual phase, sexual urges become reawakened from their slumber, but this time

they are directed at peers of the opposite sex (or same sex if the adolescent is homosexual) (Heffner, 2000). The re-emergence of the Oedipal and Electra complexes leads to teenagers challenging their parents or other authority figures. They also become more impulsive in their behavior (Straub, 1993).

All of Freud's psychosexual stages are based around three personality concepts: the id, the ego, and the superego. Children are born, initially, with only an id. The id is essentially an instinct that is solely focused on achieving pleasure (and avoiding pain). It is oblivious of reality, and it only cares about getting its immediate needs met. The ego develops within the first few years of life. It is based more in reality, and it understands that others also have needs and desires that must be taken into account. Finally, the superego develops near the end of the phallic stage. The superego is concerned with morals that are learned through external restraints imposed on the child by its parents, and later, by the broader society. This provides a person with an ethical framework to determine what is considered right and wrong (Heffner, 2000).

The id resides solely in the unconscious, and from there it drives human emotion, impulses, and beliefs. The superego resides in the subconscious. This means that there is a large part of our personality that we are unaware of because we do not directly access it at a conscious level. The ego floats between the three levels of consciousness. Throughout each of the developmental stages, this ego must learn to balance the needs of the id with the constraints imposed by the superego (Heffner, 2000). In other words, it must maintain a healthy understanding of the external reality, as well as the opposing internal forces that exist in any given situation, and adjust behavior accordingly.

Erikson's Psychosocial Development Theory

Erikson was a student of Sigmund Freud. Like Freud's theory of psychosexual development, Erikson divided his psychosocial personality development theory into stages. However, Erikson took a bolder and more comprehensive approach, expanding his focus beyond sexuality, and taking into account the individual's entire social experience. He called this lifelong process the "epigenetic principle," seeing the journey as a perpetual adaptation of innate, hereditary traits to the individual's specific environment that he or she is brought up in (Jarvis, 2004).

Erikson centered each of his theoretical stages of development around a "psychosocial crisis" that the ego must face. In this crisis, individuals face an existential challenge based on where they fit into the social world, in relation to their parents, family, friends, community, and, eventually, their romantic partners. Through these psychosocial crises, children evolve their ego identity, which is a self-consciousness or awareness that is discovered through distinct stages of social interaction. It is important for a developing child to master each psychosocial stage, in order to gain competence in a particular psychological attribute, which can help lead to healthier relationships with others throughout the rest of life (Heffner, 2002). The two relevant stages that I am concerned with in this essay are Competence (Stage 4) and Fidelity (Stage 5).

When children first enter the competence stage, their world expands quite a bit outside of their immediate family unit. Suddenly, the most important relationships involve peers within school and the local neighborhood. Through these broader social interactions, children move beyond simple play and learn to become industrious; to create things. Positive support from peers and teachers becomes critical here, because this support helps children develop competence and self-esteem. Peer approval leads to feelings of pride and a sense of accomplishment. In the same vein, if children feel continually inferior to their peers, they may

lose competence and develop feelings of inadequacy. This can haunt them as they move onto later stages. In short, the psychosocial crisis of the competence stage is the struggle of feeling industrious versus feeling inferior in the eyes of one's peers (McLeod, 2008a).

The last years of the competence stage sets up young teenagers for the Fidelity stage. It is in this stage that a majority of adolescence is spent. As puberty begins, adolescents' concern about how others see them becomes greatly amplified, and they require more than simple praise for what they create or produce. They need to feel fully accepted (Olhoff, 1996). There is also a subtle transition in which children in the fidelity stage become more preoccupied about the kind of activities and groups that they associate themselves with. Adolescents are trying to carve out their identities, and once they choose the affiliations they want to have, it is extremely important for them to feel like they fit in with other peers who they closely identify with. An important part of this identity formation process is the development of ideals and morals. Adolescents can become very passionate about the causes they support, but this conviction can also lead to intense idealism and intergroup conformity. The existential crisis in the fidelity stage involves the struggle to find identity in an effort to avoid confusion about the particular role one should play in his or her life (Harder, 2009).

Erikson's developmental theory has inspired a considerable amount of experimental research, as well as further theoretical elaboration around the concept of identity formation during the adolescence period. One of the most prominent researchers in this area is James Marcia. His expanded theory of identity achievement focuses on the extent that adolescents explore and ultimately commit to alternative ideologies and occupations (McCabe, Roberts, & Morris, 1991).

Piaget's Cognitive Development Theory

While Freud and Erikson focused centrally on ego identity development and the evolution of children's social relationships with others, Piaget was more interested in cognitive development. The basis of his theory is centered on schemas. As humans experience the world, they uncover patterns and eventually organize this empirical knowledge into categories (schemas), which help them better understand objects and events in their environment so that they can interpret meaning or how it relates to them (McLeod, 2009). According to Piaget, humans continually evolve their existing schemas by either "assimilating" or "accommodating" new information that they gain through additional experiences. People may *assimilate* the new information by adding it to the schema. During assimilation, they might subjectively interpret this information so that it rationally fits in with their pre-existing beliefs. Alternatively, humans may *accommodate* the new information by modifying their existing schematic assumptions based on the lessons that the new information has taught them (Huitt & Hummel, 2003).

Piaget's developmental theory involves 4 stages. The last two, Concrete Operations (7-11 years old) and Formal Operations (11-16 years old), are the most relevant for this discussion. Unlike Erikson's focus on development over the entire human lifespan, his stages, on the surface, only extend into the mid-teenage years. However, critics of Piaget maintain that a majority of people take much longer to reach a mature level of formal operations thinking. Many reach this stage in specific areas of expertise but remain concrete in other areas they are less familiar with. Piaget, himself, recognized that some children would not advance to formal thinking until well into adulthood (Evans, 1973).

In the concrete stage, children learn how to think rationally and logically about objects they physically interact with. However, it is critical for a child at this stage to be able to see and manipulate the object, and thinking remains at a literal, black-and-white level. As children

progress through the concrete stage, they come to realize that appearances can be deceiving, and that objects are not always what they seem when viewed in various contexts or perspectives. Piaget calls this "conservation." This is an extension of "object permanence," in which very young children come to realize that just because an object disappears from their view, it doesn't mean that the object ceases to exist. Along the same lines, children in the concrete stage learn "reversibility," or that actions taken on an object can be reversed (Tribe, 1982). For example if a completed jigsaw puzzle is disassembled into pieces, it can be put back together again, since it is still technically the same material object. Through this understanding of conservation and reversibility, children begin to develop operational reasoning, in which they are able to mentally consider and predict how the object in their hands might be affected by certain events (Miller, 2007).

In the Formal Operations stage, abstract thinking begins to take shape. When adolescents reach this stage, they are able to problem-solve in a more symbolic manner. They can walk through real-world scenarios involving hypothetical objects without requiring their immediate physical presence. This is a major step in cognitive development because it enables adolescents to creatively separate symbols from their literal meaning, while using imagination and inferential reasoning to form mathematical or logical arguments about how different actions might affect an outcome. Along with this advanced mental reasoning, adolescents acquire the ability to categorize various items into abstracted concepts and themes. They also learn how to create hypotheses and isolate variables in order to logically determine causal effects (McLeod, 2010).

Adolescent Developmental Themes and Sports Participation

Much of the Freudian-based research on adolescence, in relation to sports participation, has revolved around risk-taking behavior, perceived risk, or the relationship between athletics

and sexual aggression. There also have been studies done which look at vigorous physical activity as an outlet channel for aggressive, libidinal, or unresolved issues surrounding physical handling as an infant. Concerning Erikson and his psychosocial developmental stages, there is a considerable amount of research in the literature surrounding the role that sports plays in identity formation, self-concept, and peer relationships. Finally, the bulk of the sports research related to Piaget's cognitive theory deals with egocentrism, the enhancement of cognitive performance, and the facilitation of formalized, abstract thinking.

Risk-Taking Behavior and Perceived Risk

Many researchers have associated positive health behaviors with youth sports, such as less drug use and a healthier diet (Pate, Stewart, Levin, & Dowda, 2000). Savage and Holcomb (1999) even determined that females who are involved in high-performance, competitive sports engage in less sexual risk-taking behavior. Wetherill and Fromme (2007), however, explored how sports participation in high school may, in fact, contribute to risk-taking behavior by conditioning adolescents to attribute less risk to activities such as alcohol use and unsafe sexual activity. By focusing on the late adolescence phase, they found that the favorable trends in early adolescence shift as adolescent athletes become older. In their study, sports participation in late adolescence was actually associated with more alcohol use, sexual partners, and instances of unsafe sex.

Wetherill and Fromme (2007) determined, specifically, that perceived risk mediates the association between athletics and risk-taking behavior. The authors believed that this lowered perceived risk among older athletes comes from years of receiving preferred status and treatment from teachers and their peers, including special tutoring opportunities and relatively little punishment for delinquent acts. Within this privileged reality, older athletes believe there will be

few negative consequences for engaging in impulsive behavior. Thus the id becomes less restrained by the ego. The unique athlete experience in high school also emboldens what Piaget calls the "invincibility fable."

Athletics and Sexual Aggression in Dating

It has been found that involvement in aggressive high school sports may encourage the development of misogynistic and homophobic attitudes, including rape myths. This influence may be a result of high school sports promoting "rigid and traditional male roles," at a time when young boys are fixated on establishing their male identity while simultaneously experiencing romantic, sexual relationships with girls for the first time (Forbes, Adams-Curtis, Pakalka, & White, 2006, p. 444). In their study, Curtis et al. (2006) found that college men who participated in aggressive high school sports had significantly more sexist, derogatory, and violent attitudes towards women and homosexuals. They also were more likely to engage in aggressive or sexually coercive behavior.

Sport Activities as an Outlet for Psychosexual Unrest

Some psychoanalysts take the position that frequent exercise is a narcissistic activity in which the libido becomes fixated on the self, and this in turn interferes with the development of healthy, intimate relationships with others. However, Turp (2007) alternatively theorizes that exercise is more likely to create a healthy level of self-focus. By respecting one's own body and working to physically improve one's self, self-esteem can be boosted and, in turn, facilitate the development of interpersonal relationships. Like the old adage, you must love yourself before you can love others. Sports, in particular, add a competitive component to exercise which provides several benefits to adolescents, from a Freudian standpoint.

First, competitive sports give restless teenagers a way to channel their newly discovered sexual and aggressive energies into more healthy activities, supplanting unsafe sex and certain delinquent behaviors, related to pent up aggression (Turp, 2007). Sports are really an evolved form of childhood play. Around age 7, children become naturally drawn to competition. Even before this phase, however, children begin to use play to act out past emotions and frustrations within a safer, imaginary setting (Eppright, Sanfaco, Beck, & Bradley, 1997). As the child becomes an adolescent, these emotions and frustrations become stronger because repressed instinctual impulses suddenly bubble to the surface. Sports allow these formerly repressed impulses to be diverted so that they are not acted out in a destructive fashion. Furthermore, sports and other vigorous physical activities allow adolescents to externalize neurotic anxieties or psychosomatic symptoms. They offer adolescents a unique opportunity to better manage such unconscious disturbances by confronting them in a more proactive, tangible manner (Turp, 2007).

Secondly, athletics offer a highly structured environment with concrete rules and clear boundaries. In a competitive sport, adolescents come face to face with the reality principle, and thus become more in touch with the role of their ego. By discovering, first-hand, their own physical limitations, adolescents' feelings of invincibility and omnipotence become suppressed (Turp, 2007).

Thirdly, sports participation provides a venue where one can engage in what Freud calls a "drive for mastery" (Jaffe, 1982). Physical exercise approximates the process that infants go through as they first discover how to move their own bodies. Becoming conditioned and learning the skills for a particular sport involves "a progression from gross and approximate movements to precise and well-timed ones" (Turp, 2007, p. 173). The rhythmic and circular qualities of

many sports and exercise movements also are similar to the movements that babies learn to master (Turp, 2007).

Identity Formation and Egocentrism

Puberty involves many physical changes in the body that occur quite rapidly. This can be quite a shock for many adolescents because they must now accept this new physical appearance and incorporate it with who they once believed themselves to be (McCabe, et al., 1991). This is where Erikson's concept of an identity crisis comes in.

As Piaget describes, this is also the point, cognitively, where a child begins to adopt abstract, formal operations thinking. In terms of identity, this is a game changer. Children no longer just accept the way things are. They now understand that people aren't simply prescribed roles, but rather they make choices to play certain roles. This allows them to see, at least at an elementary level, how their own choices may impact their lives in the long run, as well as who they will ultimately become (McCabe, et al., 1991).

Because of this new emphasis focus on choice, it is important for teachers, coaches, and parents to give adolescents control over what sports and physical activities they participate in. Sports are a great way for teenagers to test different roles. Moreover, involvement in extra-curricular sports provides a means to discover personal preferences, adopt values and norms, and interact with other peers. Because these activities reside outside of the normal, rigid school curriculum, they offer a lot more freedom for teenagers to explore new interests and expand their social networks to peer groups that they otherwise wouldn't have an opportunity to interact with (Feldman & Matjasko, 2005). While adolescents should be offered a variety of athletic opportunities, self-selection is critical because it allows individuals to explore and follow their own paths, as they attempt to forge their adult identities. (Eppright, et al., 1997; Krouscas, 1999).

Adolescents do require discipline and structure, especially during early adolescence when they are particularly rebellious and enjoy testing limits (Straub, 1993). The important thing is to still provide choices within the overarching structure, and present opportunities for students to express their individuality (Robbins, 1983).

The formal operations capabilities of abstraction and reflection are a major step in a child's cognitive development. However, these skills are still rather immature, and they result in what Elkind (1967) called adolescent egocentrism. This consists of a belief in an "imaginary audience" and the "personal fable." The imaginary audience involves adolescents believing that other people are constantly focusing on or criticizing their appearance and behavior. The personal fable represents the adolescent idea that their personal situation is entirely unique and no one else has ever experienced what they have before, so they cannot possibly understand (Elkind, 1967).

In sports, adolescent egocentrism can manifest itself in a few different ways. For example, an athlete may personally take credit for a win, believing that it was his or her performance which critically carried the team to victory (whether objectively true or not). However, if athletes have a bad game or their team loses, they are quick to distance themselves from the situation and externalize the blame. They claim the loss or bad play was a result of bad referee calls or poor field conditions (Robbins, 1983). Some may also use an injury (real or contrived) as a crutch, especially in individual sports. Before a big match, adolescent athletes often will suddenly complain about a minor, nagging injury so that they can later attribute any potential loss to this injury (Straub, 1993). Additionally, teenagers with low self-esteem, or a lack of perceived physical competence, may become highly anxious in competitive situations, as the imaginary audience and personal fable myths jump to the forefront in their minds. The stress

that these assumed critiques by others create may cause them to dislike sports, and perhaps even lead to avoidance of physical activity in general (Eppright, et al., 1997; Krouscas, 1999).

The beliefs in an imaginary audience and a personal fable are really, in a sense, hypotheses about the world that an early adolescent contrives. Formal operations thinking allows children, for the first time, to come up with such hypotheses and then test them based on empirical evidence. Participation in sports offers adolescents enhanced opportunities to engage intimately with a peer group, within the context of team activities. Through this intensive interpersonal experience, adolescent athletes gain an advantage over many non-athletes (McCabe, et al., 1991). They become bonded with each other and come to realize that their personal thoughts and feelings are not so unique. They learn that their peers share similar fears, and that because of these similarities, their peers are more likely to also be focused on themselves rather than constantly scrutinizing others. Ultimately, this helps disprove the imaginary audience and personal fable, and thus may lessen inner social anxieties during the identity formation process.

Self-concept, Peer Relationships, and Achievement

As children enter Erikson's competence stage in early adolescence, peer relationships become the epicenter of a child's social life, and an important component of identity formation (Daley & Leahy, 2003). According to Olhoff (1996), "Social competence is a better predictor of health and success than IQ, college degrees, or standardized outcome tests" (p. 10). Self-concept and self-perception are at the root of social competence. Therefore, it is important that individuals know their own worth and present themselves confidently, because this attracts other peers and leads to healthy interpersonal relationships. Besides a strong emphasis on peer relationships, early adolescents begin to focus on being industrious. This means that they

strongly desire to create tangible things and experience true achievements. Through their peer relationships and the things they create or achieve, adolescents are able to establish self-worth, along with their personal adult identity (Dyk & Adams, 1987).

Robbins (1983) describes the self-concept or self-image as an attitude with several dimensions. The first dimension is self-consciousness. This is really a test of the ego's ability to apply the reality principle to a given situation. How accurate is the individual's self-image in relation to his or her actual abilities and accomplishments? A second dimension is perceived self. Do the perception of self and the perception that others have toward the individual approximate each other? A third dimension, stability, is how important or valuable individuals perceive their own presence and contributions to be to a particular situation. Finally, there is self-esteem, which is more of the general feeling that individuals have about themselves, regardless of the situation.

Adolescents can boost all four of these self-concept dimensions through participation in athletic extra-curricular activities because it helps them increase their confidence in both their physical bodies and their sexuality. Such activities provide a tangible opportunity to work on physique and bodily coordination. Involvement in these activities often leads to adolescents feeling more attractive and appealing to others, while also offering a semblance of control over how one's body looks and works. Sports are a self-affirming behavior because they teach adolescents how to gain self-assurance through performance, personal achievement, and mastery of skills (Daley & Leahy, 2003). Moreover, there is a significant correlation between physical competence and peer acceptance (Weiss & Duncan, 1992). Indeed, athletes typically have more peers desiring to be friends with them (Feldman and Matjasko, 2005).

There is a strong association between peer relationships and achievement (Roseth, Johnson, & Johnson, 2008). According to Smith (1999), the primary motivations for becoming

involved in athletics are to build friendships, acquire identity-based affiliations, have fun, and learn new skills. Three out of four of these motivations are socially based. Smith found that perceptions of friendship and peer acceptance during organized physical activities do, in fact, influence adolescents' attraction to sports and exercise.

Social Interdependence Theory supports these motivational claims. This theory claims that the nature of interdependence within groups is a critical factor in organized activities and that cooperation leads to different outcomes than competition (Deutsch, 1949). A meta-analysis of 148 different studies on this topic has demonstrated that cooperative interdependence structures are associated with higher achievement than competitive structures. In addition, cooperation is associated with more positive peer relationships (Roseth, et al., 2008).

These findings imply that in order to increase physical competence and foster active lifestyle habits, it is important to emphasize the social aspects of high school sports. To maximize the psychosocial benefits of sports participation for adolescents, Robbins (1983) suggests that coaches, teachers, and parents not define accomplishment simply on the basis of winning and losing. Offering too much praise when athletes win can encourage their egocentrism and lead them to become fixated on achievement behavior. Delivering too much criticism when they lose can discourage young athletes, embarrass them amongst their peers, and undermine their self-esteem. To maintain healthy adolescent development, Robbins recommends that accomplishment and achievement be recognized within the frame of personal improvement. Keeping journals or logs to track performance over time can help teenagers improve their self-image by showing them tangible evidence of their progress within the physical domain. It also allows them to become more in touch with their own physical strengths and weaknesses, which is helpful in identity formation (Klomsten, Marsh, & Skaalvik, 2005). In the same vein,

motivation to do sports should not be based on extrinsic reward. In order to persist, participation must be driven by intrinsic desires to participate in social activities that are personally challenging (Robbins, 1983).

Finally, gender must be taken into account when discussing self-concept and self-perception in relation to sports. The sports that adolescents choose to play are often dependent on gender. Males participate in sports that emphasize danger, speed, and aggressiveness (e.g. football), while females prefer sports that involve more aesthetics and gracefulness (e.g. ballet and gymnastics). In addition, adolescent girls generally tend to have a lower physical self-concept than boys (Klomsten, et al., 2005). This may explain why body image and appearance are the top reasons that females get involved in sports, while males are typically more motivated by success factors (Biddle & Fuchs, 2009; McCabe, et al., 1991).

In truth, early adolescence is a time when both boys and girls become very focused on body image, and they constantly compare themselves to the bodies of their peers (Straub, 1993). This is understandable, because most children are beginning to go through puberty in this phase. Thus, there are a lot of changes occurring in their bodies, and often these changes occur at somewhat different rates across peers. Around this time, gender stereotypes about bodies become quite predominant. According to Klomsten, et al. (2005), it is recognized that men should have large muscles in their shoulders and arms, but women should be slender and toned, without bulky muscles. However, these authors state that girls obsess more than boys about having an ideal body, and suggest that girls may be more influenced by media messages in magazines and television.

The best way to positively impact physical self-concept is to focus on its core dimension, global self-esteem. For females, sports participation may be most influential and beneficial to

self-esteem during pre-adolescence (Boyd & Hrycaiko, 1997). Based on Piaget's theory, pre-adolescents reside within the concrete operations stage, in terms of cognitive development (Straub, 1993). This means that mastery of skills is central to a girl's self-concept at this age. However, by the time that females reach adolescence, they are more likely to associate fitness and sports with physical appearance, replacing skill development as the primary contributor to global self-esteem. Since females already have a lower physical self-concept than males, age and early intervention are critical to enhancing this physical self-concept (Boyd & Hrycaiko, 1997).

Sports and Cognitive Development

Piaget, in his theoretical model, focused quite a bit on the connection between physical and cognitive development, especially within the first 3 stages. It is widely recognized that physical activity acts as a critical contributor to cognitive performance from a very early age. As an infant, during the sensorimotor stage, a child primarily relies on sensory perceptions and motor activities to learn about how to interact in the world. This process begins, primitively, with innate reflexes such as sucking and grasping, but eventually leads to repeated reaction patterns designed to elicit a learned response from something or someone in their environment (??).

In the pre-operational and concrete operational stages, physical activity continues to play a significant role in cognitive development. Young children have a hard time filtering information and determining what pieces of information they need to focus on in order to complete a specific task. Therefore, mixing physical activities in between cognitive tasks can help them clear their working memory of irrelevant information that has built up so that they have more mental resources to focus on the task at hand (Pellegrini & Smith, 1998). With these younger children, physical activity typically occurs in the form of play. This is a pre-cursor to

sports participation. It allows children to practice physical skills and become more coordinated in a fun, relaxed, unstructured, and creative way (Eppright, et al., 1997).

Rough and tumble play, in particular, is common among boys. By mimicking fighting or wrestling scenarios, children can begin to establish and maintain typical dominance relationships, in a similar way that dogs do within a pack. Through this process, they socially learn to project and interpret play signals, so that they can understand the difference between play and true aggression (Pellegrini & Smith, 1998). In addition, children, beginning around age 7, purposely create competitive situations and activities with their peers in order to determine who runs the fastest, who throws the ball the farthest, etc. Later on, in adolescence, these social organization skills become important for children to define themselves, explore various roles, and form persistent identities. Children began to transition from play to participation in structured, competitive sports at approximately 8 years old (Eppright, et al., 1997).

During the concrete stage that extends into early and perhaps mid-adolescence, children tend to mentally process things in a very literal fashion (Olhoff, 1996). They are also more impulsive, and they don't often understand the long-term consequences of their actions (Straub, 1993). They have trouble postulating how their immediate choices can ultimately impact their future, so they selectively focus on what is most practical (or desirable) at any given moment (Olhoff, 1996). Therefore, early adolescents still require a certain level of concrete structure and direction from their parents, coaches, and teachers when participating in sports (Robbins, 1993). Children, at this concrete stage, are still just beginning to understand that living a healthy, active lifestyle can benefit them in their long-term goals and success, but this is by no means their primary motivator to participate in sports (Gray & Oslin, 2003).

In mid to later adolescence, cognition becomes more independent and abstracted. During this transition, a child's understanding of sports can change dramatically, from a psychological standpoint. Formal operations allow teenagers to walk through various strategic scenarios in their minds (Robbins, 1983). This capability means they can mentally predict which actions may be most effective within a real-world, competitive game situation. Coaches can more easily communicate advanced plays, game plans, and strategic techniques to a team of players who are able to think in this abstracted manner. Older adolescents can also better understand that the whole is greater than its parts. Thus, the team must work together in order to be successful (Robbins, 1983).

In the context of formal operations, sports participation provides an optimal cognitive development opportunity for teenagers to practice abstract thinking. They must think strategically while preparing for or playing a game, but this thinking is still grounded in concrete concepts and structures, in the form of straightforward rules, objectives, and goals. In addition, coaches and teachers should remember that games are a great metaphorical tool for helping adolescents understand the broader physical and social world, once they have the capabilities to understand these symbolic connections (Robbins 1983).

Conclusion

Participation in sports can play a significant role in the sexual, social, and cognitive development of adolescents that Freud, Erikson, and Piaget built their staged theories around. Athletic involvement in high school has been shown to increase some positive health behaviors but it has also been shown to lower perceived risk, increase impulsive behavior, and encourage sexual aggression. In terms of self-concept, peer relationships, and identity formation, sports can be very beneficial to adolescents trying to find their way, but only if the team culture emphasizes

personal improvement and cooperation over strict competition and achievement behavior.

Cognitive performance can be improved by incorporating physical activity, especially at an early age. Young children gain new skills and become more coordinated through play activities that eventually evolve into structured sports within the first two years of Piaget's pre-operational stage (7-8 years old). The structure of sports can help keep early adolescents grounded and focused, while providing tangible opportunities to develop their abstract thought capabilities.

Exercise and sports are typically discussed within the context of basic physical health: decreasing obesity rates, preventing diabetes, and improving heart health. This paper, however, has shown that these physical activities can also have a significant impact on adolescents' psychological development, mental health, and level of achievement.

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