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Assessment in Youth Sport: Practical Issues and Best Practice Guidelines

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Abstract

Assessment is an important element to the present and future of sport psychology (McCann et al., 2002), both in science and in practice. Yet, there exist few resources addressing the unique developmental parameters facing sport scientists and sport practitioners when it comes to conducting sound assessment across the athletic lifespan. Indeed, this aspect of the literature remains particularly sparse with respect to youth sport assessment (Noble, 2011). Therefore, the purpose of this paper is to provide an understanding of the practical issues and best practice guidelines pertaining to assessment during the provision of sport psychology services to children and adolescent athletes.

Practical Issues and Best Practice Guidelines

For quite some time, researchers have devoted a significant amount of attention to the antecedents and consequences of youth sport involvement thereby documenting the various psychological, physical, social, and emotional benefits associated with youth sport participation (see Fraser-Thomas, Côté, & Deakin, 2005 for a review). Opportunities exist for children to participate in youth sport and range from recreational levels of participation to more elite and specialized levels of involvement; these opportunities are oftentimes found within school systems and community-based recreational programs. With so many avenues by which youth are able to become involved in sport, it is not surprising that this special cohort of athletes comprises the largest sport population, with more than 60 million children having been estimated to be involved in some form of organized sport in the United States alone (National Council of Youth Sports, 2008).

The large number of children involved in youth sport might lead many to believe that sport psychology service provision at this level of sport occurs frequently, yet a limited number of empirical and practical resources regarding “doing” sport psychology with youth athletes exist. To help address the gap in the extant literature pertaining to effectively providing psychoeducational sport psychology services to youth sport participants, Visek, Harris, and Blom (2009) developed the Youth Sport Consulting Model (YCSM) as a comprehensive framework to guide professionals in their applied work with youth athletes. Included in this model but sometimes overlooked as a discipline is the use of assessment throughout the consultation relationship. In fact, in 2002 McCann, Jowdy, and Van Raalte noted that the

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field of sport psychology as a whole initially lacked a strong repertoire of assessment tools, although this has improved somewhat with research and texts dedicated to this particular area of the discipline (e.g., Duda, 1998; Nideffer & Sagal, 2001; Ostrow, 2002). Still, assessment remains an important element to the present and future of sport psychology (McCann et al., 2002). This may be particularly true when attempting to balance the psychometric strength of various sport and exercise psychology measures with the practicality and ease of use of such measures in applied work (O'Connor, 2004).

Initial and subsequent assessment is critical in working with children in order to develop: (a) an accurate conceptualization of the athlete-client's needs; (b) to develop an appropriate action plan; and, (c) to evaluate the effectiveness of such interventions once implemented (Peterson, 2004; Smith, Smoll, & Christensen, 1996). Unfortunately, it has been suggested that the literature available regarding assessment within youth sport psychology consultations remains relatively sparse (Noble, 2011). Given the qualitative and quantitative assessment methods that are currently available to sport psychology practitioners, coupled with the unique modifications necessary to work effectively with youth athletes (Visek, Harris, & Blom, 2006a; 2006b; 2009), practitioners would likely benefit from a practical synthesis of assessment methods and options to utilize this process effectively within youth sport psychology consultations.

In fact, researchers have frequently acknowledged the importance of assessment prior to the actual delivery of applied sport psychology services (Lines, Schwartzman, Tkachuk, Leslie-Toogood, & Martin, 1999; Tkachuk, Leslie-Toogood, & Martin, 2003). In addition to helping practitioners identify who is the “client” in a youth sport psychology consultation, assessment guides both the consultant and athlete(s) in: (a) identifying and conceptualizing the client's needs; (b) determining the goals of the consultation; and (c) examining the client's current levels of functioning, all of which serve as helpful information for developing an effective intervention plan (Murphy & Murphy, 1992; Pocwardowski, Sherman, & Henschen, 1998; Tkachuk et al., 2003). Furthermore, Visek and colleagues (2009) suggest that assessing coaches and parents/guardians can also greatly enhance their receptivity to services for their child-athlete (e.g., through a needs assessment) and keep them informed and engaged throughout the consultation.

Thus, using the YCSM forwarded by Visek and colleagues (2009) as a theoretical framework, the purpose of this paper is to provide an understanding of the practical issues and best practice guidelines pertaining to assessment during the provision of sport psychology services to children and adolescent athletes. For the purposes of the present paper, children include those athletes up to age 12, young adolescents refers to those athletes between the ages of 13 and 15 years, and older adolescents include athletes aged 16 to 18 years. Although oftentimes used interchangeably with *measurement* (Zhu, 2012), for the purpose of the present discussion, the authors define the term *assessment* as a process using a variety of measures to collect information that can be used to evaluate youth athletes' current functioning in sport as well as inform practitioners about tendencies related to performances (Kaplan & Saccuzzo, 1997). After identifying some of the relevant developmental considerations influencing assessment among youth athletes, this paper will address specific objective, subjective, and observational methods of assessment that can be used during *Phase III: Doing Sport Psychology* of Visek and colleagues' (2009) model.

Developmental Considerations Influencing Assessment of Youth

It is important to note that generalizations cannot be made simply by the age of the athlete, as age is only a time-based marker (Smith, Dorsch, & Monsma, 2012). Understanding the athlete's level of mastery of key developmental tasks will provide a more accurate

understanding of what assessment methods might be more useful during the consultation (Guerra & Bradshaw, 2008). More specifically, practitioners are advised to consider cognitive, social, and emotional developmental aspects (Guerra & Bradshaw, 2008; Smith et al., 2012). Constructs of particular interest to consider when using assessments with youth might include athletes' development of self-awareness (Guerra & Bradshaw, 2008; Smith et al., 2012), self-efficacy (Guerra & Bradshaw, 2008), self-control (Guerra & Bradshaw, 2008), social understanding (Guerra & Bradshaw, 2008; Smith et al., 2012; Sroufe & Rutter, 1984), and the ability to process information and reason abstractly (Brustad, 1998; Horn, 2004; Smith et al., 2012). This list is not meant to be exhaustive, but rather a starting point for professionals to consider. These specific areas of development have been shown to be important considerations when selecting assessments, administering assessments, and sharing feedback from the assessment. The following considerations

Self-Awareness

In sport psychology there is much emphasis on the understanding aspects of one's self regarding awareness of thoughts, actions, and decisions, as well as perceptions of one's ability; however, these aspects of self are highly influenced by developmental level (refer to Harter [1999, 2003] and Horn [2004] for a full review of the various stages of the development of self).

Specifically with self-awareness, children typically describe themselves based on concrete, observable features and then move to using autobiographical memories (Guerra & Bradshaw, 2008; Moore & Lemmon, 2001), considered by Piaget (1952) to be the concrete operational reasoning stage. Therefore, it might be challenging for athletes under twelve to accurately conceptualize their physical, psychological, and behavioral attributes (Guerra & Bradshaw, 2008). For example, with this age group, it is recommended to gather information from multiple sources (e.g., parents, coaches) and across time or throughout the season. When working with athletes who are in their early adolescent years and now in the formal operational reasoning stage (Piaget, 1952), professionals should be aware of the beginning of the stage of identity crisis where athletes' self-descriptions are often based on varying roles and sources of information, which may lead to conflicting self-stories and understanding (Guerra & Bradshaw, 2008). Sport and exercise psychology professionals may feel that the athletes are contradicting themselves or even being misleading, but rather the athletes are still working to conceptualize the components of their being. Older adolescents have typically a more developed level of self-awareness; however, at this stage, as well as with the young adolescents, social desirability and the desire to please respected others (Smith et al., 2012), such as the professional, may lead to inaccuracies in self-awareness.

Additionally, an individual's level of developed self-awareness and sense of positive self has been shown to motivate current and future behaviors (Guerra & Bradshaw, 2008). Thus, if professionals can determine the level of self-awareness in their athletes, they can use this information in understanding motivation and behavioral choices and select appropriate assessments based on how youth athletes manifest these developmental differences regarding their self-awareness.

Self-Efficacy

Self-efficacy is another aspect of self that should be considered in assessment with athletes, as a positive and strong sense of self-efficacy has been shown to lead to increased effort, failure recovery, and setting challenging goals (Guerra & Bradshaw, 2008), which could influence the work between the client and the professional. Children's ability to distinguish between effort, luck, and ability is often not well established (e.g., Nicholas, 1978; Wigfield,

1988), so it may not be relevant for a practitioner to focus much on trying to determining this in a young client. Furthermore, if professionals do want to assess levels of self-efficacy, they will want to carefully examine the possible questionnaires for the appropriate level of the specific client, as well as review developmental theories on achievement motivation and self-efficacy. While adolescents may be able to more accurately evaluate their level of self-efficacy, as with other aspects of self, social agents become a large influence in perceptions and evaluation (e.g., Horn 2004; Meldrum & Hay, 2012). Both peer and coach feedback may skew an adolescent's ability to accurately discriminate true self-efficacy and others' expectation for success on the task.

Self-Control

Guerra and Bradshaw (2008) describe self-control as "... a prerequisite for goal-oriented behavior" and is highly based on the "structure and function of various socio-cultural groups" (p. 9), both which are very relevant to sport and important considerations for working with youth athletes. More specifically, in the sporting context, athletes' levels of self-control often are revealed in the way that they follow the rules, regulate negative emotions, make sportsmanship decisions, and resist inappropriate temptations. For children, their decisions about self-control are based on environmental contingencies (Guerra & Bradshaw, 2008), like parents' and coaches' rules and expectations. In consulting relationships, practitioners can also fall in this category, influencing decisions that athletes make along with the goals that they may set. As the athletes move into early adolescence, they begin to internalize their standards and make decision based their own monitoring rather than requiring as much external monitoring; however, much more emphasis is placed on peers at this stage of life (e.g., Meldrum & Hay, 2012). Practitioners will want to take into consideration the external sources that athletes' self-control skills and decisions when conducting assessments to better determine what decisions and thoughts are truly the athletes' verses their representation of significant adults' expectations. Another consideration should be the level of stressors that athletes are experiencing, as this has been shown to impact self-control reserves (Muraven, Tice, & Baumesister, 1998). This consideration will be less relevant when working with older adolescences as their self-control skills are much more developed, although it is an ongoing process. However, one significant consideration in assessing late adolescences is that since they may have well developed self-control, they might not be as forth coming to practitioners with their challenges and limitations, while children are often more likely to display true behaviors without restrictions based on social norms.

Social Understanding

Because youth do not typically participate in sport and physical activities in isolation, it is important that sport and exercise psychology professionals conceptualize youth development within a social paradigm when selecting measures and performing assessment with children (Brustad & Babkes, 2004). For example, researchers have suggested that children's social understanding through sport develops across the lifespan as is evident by changes in their cultural competence and identity, conflict resolution abilities, social relationships, and sources of physical competence and motivation (Brustad & Babkes, 2004; Fraser-Thomas et al., 2005, Petitpas, Cornelius, Van Raalte, & Jones, 2005; Smith et al. 2012; Weiss & Stuntz, 2004). Thus, in determining what methods to utilize when incorporating assessment with children, Smith and colleagues (2012) recommend utilizing relevant theory and research aims to drive the selection of developmentally-appropriate measures.

For example, one construct that has been shown to vary developmentally regarding children and adolescents are their sources of perceived competence (Horn, 2004). Although several competence-oriented theories may be available for professionals to use in guiding their work

with children, one such framework that accounts for developmental differences is the competence motivation theory (Harter, 1978). With this framework in mind, Weiss and William (2004) noted that younger children under the age of 10 years tend to use their parents/guardians, spectator feedback, the outcome of competitions as the primary sources to determine their own competence. This reliance on external social sources then shifts to youth athletes' peers and coaches once they approach early adolescents (10-15 years). Finally, as these athletes continue to develop into later adolescents (16-18 years), their sources of perceived competence becomes more internal and self-referenced including skill improvement, goal achievement, and effort exerted. Because the sources of competence youth utilize evolve as they develop, researchers and practitioners should be sure to use assessments that include measures of the relevant social constructs, keeping in mind the target sample of interest and selecting developmentally-appropriate measures for that sample (Smith et al., 2012). In this example, the inclusion of measures that assess the relevant sources of competence depending on the developmental group of interest (e.g. assessing internal versus external sources of competence) would help ensure that researchers and practitioners are gaining a developmentally-appropriate conceptualization and understanding of competence among youth athletes.

Information Processing and Abstract Reasoning

Tied to their social understanding is youth athletes' cognitive development (Smith et al., 2012). In fact, for some time now researchers in sport and exercise psychology have acknowledged the importance of accounting for changes in cognitive functioning as youth develop (e.g., Brustad, 1998; Horn, 2004). Changes in children's ability to process information is one such cognitive-related variable that has been identified as important for sport and exercise psychology professionals to account for when utilizing assessment with youth athletes (Smith et al., 2012).

For example, developmental psychologists and researchers have documented the changes in children's speed in processing information (Duan, Shi, & Zhou, 2010; Miller & Vernon, 1997), their decision-making abilities (McNorris, 1999), their capacity for information processing (see Reeder, Martin, & Turner, 2010), and their ability to process abstract information (see Piaget, 1952) as they develop from childhood through adolescence and into adulthood. Thus, based on these potential developmental differences in processing, professionals might consider incorporating measures that do not require their youth athletes to engage in unnecessarily complicated and abstract reasoning if not relevant to the purpose of the assessment (Brustad, 1998). Additionally, if such complex reasoning and information processing is important, the measures should be developed that caters to those youth with the least developed in terms of their speed and capacity for information processing (Smith et al., 2012). Further, in order to assess cognitive-related constructs that have known developmental differences across the lifespan (e.g. achievement motivation, and/or competence), professionals are encouraged to utilize measures that have been designed for the specific cognitive-developmental stage of interest (Brustad, 1998).

Objective Measures

Research suggests as much as sixty-six percent of sport and exercise psychology consultants include some type of questionnaire in their work with athletes (O'Connor, 2004). In fact, self-report, objective measures have comprised the majority of assessment methods in the youth sport literature (Smith et al., 1996). The use of objective, psychometric measures can help enhance the delivery of services by sport and exercise psychology practitioners by: (a) accurately conceptualizing the needs of individual and/or a team of athletes; (b) evaluating athletes' progress and the effectiveness of the consultation; and (c) evaluating the sport psychology practitioner him/herself. Objective inventories can make consultations more

efficient by helping to provide structure and direction for services, assist in quantifying improvements in coping and other psychosocial skills, and provide a sense of fairness and objectivity when using anonymous response feedback for planning and evaluation purposes (Nideffer & Sagal, 2002).

When selecting objective measures for use with youth, it is important that the measures chosen are psychometrically sound, meaning they are both valid and reliable given the developmental processes of the targeted child-athlete(s). This can be completed by examining the words used in each items, the likert-type choices, and the construction of the items to determine that the scales is appropriate for the intended clientele (Smith et al., 2012). Furthermore, it is recommended that practitioners prioritize using instruments that were constructed from developmental theories and designed for children rather than simply revised from adult-based instruments (Smith et al., 2012). Doing so not only ensures that these measures are being implemented in an ethical manner consistent with the developmental abilities of the athlete-clients, but it also enhances the likelihood that the results of the assessment are accurate and will contribute to baseline conceptualizations of the young athletes' as well as their psychosocial progress. It is important to note that while the developmental process can be age-related; however, they are not necessarily age dependent per se (Brustad, 1998), although oftentimes biological age is correlated with notable physiological, cognitive, emotional, and social maturation. That said, developmentally appropriate measures generally meet three criteria regarding the constructs they purport to measure in a given population: (a) they mirror the underlying cognitive structure of the persons being measured at a given developmental level; (b) concurrently, the measure is easily understandable by those persons, written in simplistic language consistent with their information processing abilities, and (c) the constructs being assessed are relevant and meaningful to those persons (Brustad, 1998).

Scouring the literature for **appropriate**, youth sport inventories can be cumbersome; therefore, we forward a matrix of select measures of assessment germane to youth sport (see Table 1). The table is not intended to serve as a review of all available youth sport measures and therefore is certainly not exhaustive. Rather, the table elucidates some of the more common areas of measurement within youth sport today and provides select measurements within the various content areas that are well-documented in the literature and lend themselves to relatively easy use with respect to administration, scoring, and interpretation. Indeed, professionals utilizing these measures should have training in administering and evaluating objective tests (Poczwardowski et al., 1998). Furthermore, informed consent and assent must be obtained prior to the administration of tests so that the purposes of the assessment are rightfully understood. An in-person debriefing is also necessary regarding the results and interpretation of the assessment results, so that stakeholders remain informed and engaged in the process. Additionally, Poczwardowski and colleagues (1998) note that objective results should be triangulated with other forms of assessment (i.e., observations and subjective measures).

Subjective Measures

Subjective measures such as intake assessments, anecdotal reports from appropriate stakeholders, and client self-assessment reports can provide valuable information and can often compliment objective assessment methods, or even provide a directional beacon for discerning which objective measures would be most appropriate to administer, based on need. When using subjective measures with youth athletes, practitioners are encouraged to gather a holistic picture of the client and consider a range of possible influencing factors. Specifically, information should be gathered in order to be able to consider: a) environmental factors, such as performance and situational demands, as well as the current

skill level; b) unique psychological characteristics, both strong and weak areas, and c) behavioral response patterns (Gardner & Moore, 2005). While subjective methods are not necessarily standardized and have not been subjected to psychometric testing per se, the information gathered from these more inductive, qualitative methods can be useful as a form of criterion-referenced data based on the individual child-athlete rather than a normative comparison (Early childhood, 2005). For example, when gathering anecdotal information from parents or guardians, a semi-structured type of interview can be used as well as a very informal storytelling or narrative approach. If the client and parent give approval, the practitioner can also speak with the coach to get another perspective regarding the tendencies of the child-athlete.

To help facilitate the incorporation of subjective measures as a part of assessment in youth sport psychology consultations, professionals are fortunate to have a variety of such measures to help facilitate this process. One sport-related measure oftentimes used during the initial assessment phase is the Sport-Clinical Intake Protocol (SCIP; Taylor & Schneider, 1992). This comprehensive measure provides the youth sport practitioner with a series of semi-structured content areas in which to gather information pertaining to a variety of areas within and outside of sport for an athlete-client and/or team. In addition to allowing the practitioner to better understand and conceptualize the presenting concerns of the athlete-client, this particular measure can also aide professionals in determining if the presenting concerns and client history are able to be addressed by the practitioner, or if a referral might be more appropriate so as to ensure the client's welfare remains the priority throughout the consultation. It should be noted that the SCIP is a lengthier intake approach and that there may be components of the SCIP to which younger athletes may not yet be knowledgeable enough to respond to (e.g., family history); however, such information could be gathered from parent-guardians.

In addition to the SCIP, a general yet popular tool practitioners have used for assessment purposes originates from the early work of Lazarus' (1973; 1974) multimodal approach to understanding and conceptualizing an athlete-client's concerns by inquiring about individuals' *Behavior*, *Affect* or emotions, *Sensations* experienced, *Imagery* and interests, *Cognitions* or thoughts, *Interpersonal* relationships, and their *Drug* use or diet (BASIC-ID). Keat (1979) refined this multimodal approach and adapted it for use with children by providing appropriate modifications and common examples within each of the BASIC-ID categories that are youth appropriate. Additionally, Keat provided a series of specific psychometrically sound measures that could be used objectively to assess a client's BASIC-ID.

Another form of subjective measurement is the self-assessment. Originally described by Gumaer (1984), but recently applied to youth athletes, self-assessment serves to provide child-athletes with the opportunity to consider the various psychological skills they have learned and to reflect on how their well-being, performance, and development as an athlete has evolved by actively engaging in sport psychology (Visek et al., 2009). This type of assessment can subjectively measure the athletes' perceptions of areas of strength and those worth continued development. When determining what method of self-assessment to use to acquire self-perception information, creative and engaging methods that account for athletes' cognitive development are encouraged. In this case, Visek and colleagues (2009) suggest having youth athletes perform "skits" in which they act out their sport behaviors corresponding to the mental skills utilized in an intervention. For example, in a post-intervention assessment, athletes might role-play their pre-intervention ways of behaving and then act out how they cope using their new mental tools. This visual representation of growth and development as a part of the consultation can help the athletes reflect on and

illustrate their experiences. This approach can provide valuable evaluation data in a non-threatening and fun way that aids the understanding of the sport psychology skills gained.

Observational Measures

Sport scientists and practitioners have a variety of both qualitative and quantitative assessment methods of gathering data. Oftentimes, behavioral observations including live and/or videotaped competition and practice observations can be an additional valuable method of gathering information (McCann et al., 2002; Vissek et al., 2009). Through personal observation, practitioners can “form generalizations related to understanding and appreciating individual and team strengths and limitations” (Sherman & Poczwadowski, 2005, p. 22), as well as witness the level of application of mental skills learned through the sport psychology services (Sherman & Poczwadowski, 2005). In the case of youth sport participants, competition and practice observations may also include watching the behaviors and reactions of the child's coach and/or parent/guardian, which can influence or affect the child-athlete. This not only helps to triangulate the information garnered and provide a more comprehensive conceptualization of the athlete or team's interactions and environment, but also allows practitioners to learn how to more effectively implement an intervention (Orton, 1997) to their youth athlete and/or team. Additionally, this allows the practitioner to sample behaviors in real-life settings and time.

Checklists offer a structured approach to observation. That is, practitioners can use self-made checklists (Guddemi & Case, 2004) to track a variety of behaviors from the child, parent, or coach (e.g., verbal and non-verbal behaviors, interactions with relevant others). These behaviors may be related to general sport behaviors or may be specific to a targeted topic or area of change that is the focus of the sport psychology services. A checklist then provides a means for quantifying through frequency counts the number of times certain behaviors occurred; this data can be used as a baseline from which to measure improvement or growth through the delivery of sport psychology services. Observational information can also be gathered through specific behavioral observation forms, such as the Coaching Behavioral Assessment System (CBAS; Smith, Smoll, & Hunt, 1977). The CBAS was designed to assess actual coaching behaviors during practices and games and has been used with youth, high school, and professional level coaches (e.g., Cumming, Smoll, Smith, & Grossbard, 2007; Smith et al., 1996). There are 12 behavioral categories divided into reactive and spontaneous actions of the coach that practitioners would look for and code the frequency of occurrences. Examples of categories include reinforcement, punishment, mistake-contingent encouragement, keeping control, and general encouragement. The CBAS has shown high inter-rater reliability in sport research, in addition to being able to identify individual differences and offer accurate scoring for a comprehensive assessment of overt behaviors (Smith et al., 1996). Depending on the purpose of the sport psychology services, the practitioner could identify overall coaching tendencies or specific behaviors directed towards a particular athlete-client.

When using checklists or behavioral observation forms, practitioners should consider a few recommended best practices. First, it is suggested that information is gathered from multiple observations, rather than just one-time events. In fact, three to four observation sessions might be needed in order to accurately assess typical behaviors. Secondly, observations that are most beneficial will be the ones that are of naturally occurring behaviors from a variety of settings, such as team practices, individual practices, minor competitions, and major competitions. While it is noted that the purpose of the observation will drive the decision of which settings are most relevant, practitioners should consider all possible options. A final consideration is related to sharing the observation discoveries with the client; this can be completed in a couple of ways, based on the developmental level of the athlete. Examples of

methods include watching a recorded practice or competition session together and processing the occurrences of the targeted behaviors, having the client share his or her thoughts on the situation and the practitioner sharing his or her observations, or providing a written summary of the observation feedback to the client and then verbally discussing it. Regardless of the method, it is crucial to offer feedback to clients and allow them to share their perspective on the observation.

Conclusion

Objective, subjective, and observational assessment offer great utility to sport science researchers, practitioners, and the larger sport community. However, the additional considerations and adaptations necessary when assessing youth athletes in particular can be challenging, as the resources for working with this special sport population are less plentiful compared to their adult counterparts. Thus, this paper serves to provide an understanding of the practical issues and best practice guidelines pertaining to assessment during the provision of sport psychology services to children and adolescent athletes. After identifying some of the relevant developmental considerations influencing assessment among youth athletes, this paper addressed specific objective, subjective, and observational methods of assessment that practitioners and researchers can utilize when conducting assessment within a youth sport environment.

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Table 1
Developmentally-Appropriate Objective Youth Sport Measures

Instrument	Subscales Measured	Age-Appropriateness	Original Reference
1. Scale of children's action tendencies (SCAT)	Moral reasoning, assertive, aggressive, and submissive tendencies	Children	Bredemeier (1994)
2. Competitive state anxiety-II for children (CSAI-2C)	Cognitive state anxiety, somatic state anxiety, confidence	Children, young adolescents	Stadulis et al. (1995)
3. Athletic identity measurement scale for youth (AIMS-Youth)	Athletic identity	Children, young adolescents	Harris & Watson (2011)
4. Sport motivation scale for youth (SMS-Youth)	Intrinsic motivation, external regulation, amotivation	Children, young adolescents	Harris & Watson (2011)
5. Perceived physical competence scale for children (PPCSC)	Cognitive, social, physical, and general self-worth	Children, young adolescents	Harter (1982)
6. Athlete burnout questionnaire for youth (ABQ-Youth)	Emotional/physical exhaustion, sport devaluation, reduced sport accomplishment	Children, young adolescents	Harris & Watson (2011)
7. Sport friendship quality scale (SFQS)	Self-esteem enhancement and supportiveness, loyalty and intimacy, things in common, companionship and pleasant play, conflict resolution, and conflict	Children, young adolescents	Weiss & Smith (1999)
8. Achievement goal scale for youth sports (AGSYS)	Coach-initiated motivational climate, competitive trait anxiety, sport enjoyment, motivation, and self-esteem	Children, young adolescents	Cumming et al. (2008)
9. Sport commitment	Sport commitment, enjoyment, personal investments, social constraints, involvement opportunities	Children, young adolescents	Scanlan et al. (1993)
10. Motivational climate scale for youth sports (MCSYS)	Achievement goal orientations, competitive trait anxiety, sport enjoyment and coach evaluations, intrinsic motivation, and self-esteem	Children, Young adolescents	Smith et al. (2008)
11. Sport anxiety scale-2 (SAS-2)	Somatic, worry, and concentration disruption	Children, young adolescents	Smith et al. (2006)
12. Orientations toward play (OTP)	Perceptions of importance of skill development, fair play, and winning	Children, young adolescents, older adolescents	Webb (1969)
13. Self-motivation inventory for children (SMI-C)	Self-motivation	Children, young adolescents, older adolescents	Biddle et al. (1996)
14. Parent-initiated motivational climate questionnaire-2 (PIMCQ-2)	Learning/enjoyment climate, worry conducive climate, success without effort climate	Children, young adolescents, older adolescents	White & Duda (1996)
15. Multidimensional sportspersonship orientations scale (MSOS)	Commitment, social conventions, rules and officials, opponent, negative approach	Children, young adolescents, older adolescents	Vallerand et al. (1997)
16. Youth sport values questionnaire (YSVQ)	Enjoyment, achievement, sportsmanship, contract maintenance, being fair, compassion, tolerance, showing skill, obedience, team cohesion, excitement, conscientiousness, health/fitness, self-actualization, public image, companionship, conformity, winning	Children, young adolescents, older adolescents	Lee et al. (2000)
17. Peer motivational climate in youth sport questionnaire (Peer MCYSQ)	Task-Involving climate: improvement, relatedness support, effort; Ego-Involving climate: intra-team competition, normative ability, intra-team conflict	Children, young adolescents, older adolescents Children	Ntoumanis & Vasou (2005)
18. Caring climate scale (CCS)	Caring climate in a physical activity setting	young adolescents, older adolescents	Newton et al. (2007)

Instrument	Subscales Measured	Age-Appropriateness	Original Reference
19. Youth sport experience survey for sport (YES-S)	Personal and social skills, initiative, goal setting, cognitive skills, and negative experiences	Children, young adolescents, older adolescents	MacDonald et al. (2012)
20. Sources of enjoyment in youth sport questionnaire (SEYSQ)	Self-referenced competency, other-referenced competency, act of performing skills, effort expenditure, competitive excitement, athletic recognition, affiliation with peers, positive adult interaction	Children, young adolescents, older adolescents	Wiersma (2001)
21. Autonomy-supportive coaching questionnaire (ASCQ)	Interest in athletes' input, praising autonomous behavior	Children, young adolescents, older adolescents	Conroy & Coatsworth (2007)
22. Trait anxiety inventory for sports (TAIS)	Mental agitation, cognitive worry concerning victory or defeat, somatic anxiety, flight from situation, loss of confidence	Young adolescents, older adolescents	Hashimoto et al. (1993)
23. Sport interpersonal relationships questionnaires (SIRQ)	Relationships with father and mother; parent-coach relationship	Young adolescents, older adolescents	Wylleman et al. (1995)
24. Sportspersonship coaching behavior scale (SCBS)	Good sportsmanship expectations, reinforces good/punishes poor sportsmanship, discusses/teaches/models sportsmanship, prioritizes winning	Younger adolescents, older adolescents	Bolter & Weiss (2011)
25. Athletic coping skills inventory-28 (ACSI-28)	Coping with adversity, peaking under pressure, goal setting, concentration, freedom from worry, confidence and achievement motivation, coachability	Older adolescents	Smith et al. (1995)
26. Sport orientation questionnaire (SOQ)	Competitiveness, desire to win, interpersonal competition,	Older adolescents	Gill & Deter (1988)
27. Sport leadership behavior inventory (SLBI)	Characteristics and behaviors desirable of leaders	Older adolescents	Glenn & Horton (1993)
28. Task and ego orientation in sport questionnaire (TEOSQ)	Task and ego orientation	Older adolescents	Duda (1989)
29. State sport-confidence inventory (SSCI)	State confidence	Older adolescents	Vealey (1986)
30. Team climate questionnaire (TCQ)	Clarity, role acceptance, perceived role performance, conformity, task cohesion, and social cohesion	Older adolescents	Grand & Carron (1982)

Note. Age-appropriateness was determined based on each instrument's evidence of validity and reliability within the broad spectrum of the following age groups: children = up to age 12; young adolescents = ages 13-15, older adolescents = ages 16+. Reference to the original paper for each instrument can be found in the References.