

Comparing Burnout in Sport-Specializing Versus Sport-Sampling Adolescent Athletes

A Systematic Review and Meta-analysis

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Background: The prevalence of adolescent athletes who specialize in sports has increased in recent years. Substantial literature on youth sports has linked early sport specialization to negative consequences, such as burnout and injury. However, empirical evidence directly comparing burnout rates in sport specialization versus sport sampling is very limited.

Purpose: To conduct a systematic review and meta-analysis to evaluate psychological burnout in adolescent athletes who sport specialize compared with adolescent athletes who sport sample.

Study Design: Systematic review; Level of evidence, 4.

Methods: A systematic review was performed through use of the PubMed, SportDiscus, PsychInfo, and CINAHL databases (between inception and May 2019) according to PRISMA-IPD (Preferred Reporting Items for Systematic Reviews and Meta-Analyses of individual participant data) guidelines. Results from the 3 measures of the Athlete Burnout Questionnaire and athlete specialization status were recorded and analyzed. An athlete was determined to be a “sport specializer” if he or she met the following 3 criteria: (1) athletic participation limited to 1 sport, (2) which is competed in > 8 months in 1 year, and (3) to the exclusion of all other sports.

Results: Of 3578 studies, 8 met criteria for final meta-analysis, which included 1429 athletes (mean age, 15.59 years; range, 12.5–17.2 years). Of these, 1371 (95.9%) were sport specializers, whereas 58 (4.1%) were sport samplers. A total of 1422 (99.5%) athletes completed the Athlete Burnout Questionnaire. Athletes who specialized reported higher levels of burnout than athletes who did not specialize. Specializers had a greater sense of reduced accomplishment (difference of means [Δ], 0.87; 95% CI, 0.67–1.08; $P < .01$). Specializers also reported greater exhaustion (Δ , 0.46; 95% CI, 0.24–0.68; $P < .01$) and sport devaluation (Δ , 0.41; 95% CI, 0.22–0.60; $P < .01$) than athletes who were samplers.

Conclusion: Adolescent sport specialization was associated with greater levels of burnout in all 3 aspects (reduced sense of accomplishment, sport devaluation, and exhaustion) compared with sport sampling.

Keywords: sport specialization; sports burnout; adolescent burnout; Athlete Burnout Questionnaire; pediatric sports medicine; sport sampling

Over the past 15 years, youth sports participation has increased, with a corresponding increase in the number of athletes choosing to specialize in 1 sport.⁴ Many factors contribute to the desire of parents and coaches to encourage early single sport specialization, including the hope of giving the young athlete an edge in competition, pursuit of scholarships, potential professional status, and the ability to label the athlete as “elite” at an early age.⁴ Despite these perceived advantages, some data have suggested that early sport specialization does not lead to a competitive advantage for athletes over athletes who participate in multiple sports (ie, sport samplers).⁴ When sport specialization

occurs at too young an age, detrimental effects may occur both physically and psychologically. If an athlete is postpuberty and sport specialization is performed with proper training and coaching, the athlete may be successful in reaching specific goals.² Although most athletes who are recruited to participate in collegiate athletics will eventually specialize in their sport, it does not appear that early specialization is necessary to become a National Collegiate Athletic Association (NCAA) Division I athlete.¹⁹

Despite evidence showing that sport specialization is not required, or necessary, for athletic success, parents and coaches continue to push athletes to specialize in a single sport at a young age, leading to an increased risk of dropout or burnout.³ Athlete burnout is generally defined as a cognitive-affective syndrome comprising emotional and physical exhaustion, sport devaluation, and a reduced

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sense of accomplishment.²⁰ Emotional and physical exhaustion is characterized as the lack of physical or mental energy to perform in a sport at an athlete's normal level. Sport devaluation reflects a decrease in athletes' passion toward their sport and their desire to keep improving. Finally, reduced sense of accomplishment is typified by athletes' negative perceptions of their athletic performance regardless of their actual success.⁸

Multiple journals have published consensus statements advising against early sport specialization because it puts the athlete at risk of burnout and "there is no evidence that young children will benefit from early sport specialization in the majority of sports."¹⁵ However, despite the claims of a negative correlation between sport specialization and burnout, many of the sources cited by consensus statements are review articles or other consensus statements rather than original studies. Although many studies have demonstrated an association between burnout and personality traits, such as perfectionism,¹⁰ very little research has directly compared risk of burnout between adolescent specializers and nonspecializers (ie, samplers).^{16,21} The purpose of this study was to conduct a systematic review and meta-analysis to measure burnout levels in sport-specializing adolescent athletes compared with sport-sampling adolescent athletes. Our hypothesis was that adolescent athletes who sport specialize would experience greater burnout symptoms than adolescent athletes who compete in multiple sports.

METHODS

Search Strategy and Study Selection

This study was reported in accordance with the PRISMA-IPD (Preferred Reporting Items for Systematic Reviews and Meta-Analyses of individual participant data) statement.²² This study was a systematic review of published studies; therefore, institutional review board approval was not required. A manual study selection was performed by 2 authors (N.E.G., S.L.C.) using the PubMed, CINAHL, SportDiscus, and PsychInfo databases, with any discrepancies resolved through discussion with the senior authors (M.K.M., B.V.). The following search terms were used: sport specialization; adolescent burnout; sport burnout; athlete burnout questionnaire. The databases were searched between inception and May 12, 2019. All selected articles were then screened for additional studies by use of the reference lists provided in each study. After the search with the above keywords, studies were imported into Clarivate Analytics EndNote X7 to remove duplicates. Titles and

abstracts were screened for relevance. Full text was reviewed for the remaining studies to assess for eligibility using the criteria stated below.

Eligibility Criteria

Studies that met the following criteria were included: The study was published in the English language; burnout was measured using the Athlete Burnout Questionnaire (ABQ); participants were adolescent athletes between the ages of 12 and 19 years; and athletes were classified within the study as samplers or specializers or sufficient information was provided to classify athletes as specializers or samplers. Studies were excluded if any of the following were present: The study was not published in the English language; participants were not in the age range of 12 to 19 years or age was not specified; sport sampler or specializer status was not stated or could not be determined; and burnout was not measured by the ABQ.

Athlete Burnout Questionnaire

The ABQ measures 3 dimensions (emotional-physical exhaustion, reduced sense of accomplishment, and sport devaluation) with 5 items each using a 5-point Likert scale. Athletes are presented with statements about their sport experiences and rate how often they feel that way, from 1 (almost never) to 5 (almost always). Each athlete who takes the ABQ receives 3 scores. One score is the participant's mean response from the 5 statements measuring reduced sense of accomplishment, the second is the mean response from the 5 statements measuring exhaustion, and the third is the mean response from the 5 statements measuring sport devaluation. The 3 scores are means with ranges from 1 to 5, with lower scores representing low levels of burnout and higher scores representing higher levels of burnout. Mean scores and standard deviations were obtained for each subscale. The ABQ is the most popular measure of sport burnout; previous work supports its reliability and construct validity.^{17,20} A sample of the ABQ is shown in Figure 1.

Data Extraction and Quality Appraisal

Patient characteristics included sex, age, sport played, specialization status, and number of athletes specializing per sport. The primary outcomes of interest were results from the ABQ.

Sport-specializing versus sport-sampling status was determined by recommendations from Jayanthi et al,¹³ who stated that an athlete is a sport specialist if he or she

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		Almost MOI	Never	Rarely	Sometimes	Frequently	Almost Always
1	I am accomplishing many worthwhile things in my sport	RA	1	2	3	4	5
2	I feel so tired from my training that I have trouble finding energy to do other things	E	1	2	3	4	5
3	The effort I spend in my sport would be better spent doing other things	SD	1	2	3	4	5
4	I am not achieving much in my sport	RA	1	2	3	4	5
5	I feel overly tired from my sport participation	E	1	2	3	4	5
6	I don't care about my sport performance as much as I used to	SD	1	2	3	4	5
7	I am not performing up to my ability in my sport	RA	1	2	3	4	5
8	I feel "wiped out" from my sport	E	1	2	3	4	5
9	I am not into my sport like I used to be	SD	1	2	3	4	5
10	I feel physically worn out from my sport	E	1	2	3	4	5
11	I feel less concerned about being successful in my sport than I used to	SD	1	2	3	4	5
12	I am exhausted by the mental and physical demands on my sport	E	1	2	3	4	5
13	It seems that no matter what I do, I don't perform as well as I should	RA	1	2	3	4	5
14	I feel successful at my sport	RA	1	2	3	4	5
15	I have negative feelings toward my sport	SD	1	2	3	4	5

Figure 1. Athlete Burnout Questionnaire. Items 1 and 14 are reverse scored. E, exhaustion; MOI, measure of interest; RA, reduced accomplishment; SD, sport devaluation.

meets the following 3 criteria: (1) athletic participation is limited to 1 sport; (2) the athlete competes in the sport > 8 months in 1 year; and (3) the athlete competes in the sport to the exclusion of all other sports. Athletes who were enrolled in prestigious academies, schools, or institutions to focus on their specific single sport and who practiced or competed at least 8 months in 1 year were included in the "sport specialist" group if they met the 3 criteria stated above. Any athlete who participated in > 1 sport per year or did not meet the 3 criteria stated above was included in the "sport sampler group." If insufficient data were provided to determine an athlete's status as specialist or sampler, the article did not meet the specified inclusion criteria and was, therefore, excluded from this study.

Statistical Analysis Plan: Athlete Data Meta-analyses

Athletes were separated into 2 groups (specializers and samplers) based on their demographic and sport participation history along with the mean scores from each of the 3 ABQ measures. Exhaustion, sport devaluation, and reduced sense of accomplishment were measured on a 5-point Likert scale from the ABQ. Weighted mean, weighted standard deviation, and difference in means for each of the responses were calculated and compared between the 2 groups. Differences in ABQ score means were computed between specialized athletes and nonspecialized athletes through use of a z test. P values and 95% confidence intervals (CIs) were computed. A P value ≤ .05 was considered significant, as was a CI that did not contain the null value (zero).

RESULTS

Study Selection

A total of 3578 studies were identified in the initial search. After we removed duplicates and screened titles for

relevance, 188 studies remained, which were further screened using the inclusion-exclusion criteria. A total of 180 studies were subsequently omitted, leaving 8 studies eligible for the final analysis.^{1,6,9,11,12,16,21,23} Details of the study selection process are presented in Figure 2.

Study Characteristics

Table 1 summarizes the study characteristics including the mean scores from the ABQ questionnaire for each study. The included studies consisted of 7 cross-sectional studies and 1 longitudinal prospective survey. All 7 cross-sectional studies were Level 4 evidence, and the 1 longitudinal prospective survey was considered Level 3 evidence. Data for a total of 1429 athletes were compiled from the 8 studies. Of these, 7 studies (87.5%) reported sex of the athlete, which consisted of 825 male and 528 female athletes with mean age of 15.59 years (range, 12.5-17.2 years). Athletes included in the studies played a variety of sports: handball (n = 462), soccer (n = 366), swimming (n = 366), track and field (n = 70), volleyball (n = 33), tennis (n = 11), and judo (n = 4). Sport of participation was not defined in 2 studies, leaving 119 athletes in unspecified sports.^{9,23}

Although all of the studies included in this systematic review used athlete burnout as the outcome of measure, only 3 (37.5%) of the included studies compared ABQ results directly with specialization status of the athletes.^{16,21,23} Other comparisons with athlete burnout included feelings of emotion, such as fear of failure,⁹ perceived stress,⁹ implicit attitude toward sport,⁶ self-acceptance,¹¹ and enjoyment,²³ as well as personality traits, such as perfectionism^{1,11} and intrinsic motivation.^{1,21}

In 2016, Isoard-Gauthier et al¹² performed a longitudinal survey of athletes who specialized in handball to examine the influence of athlete burnout profiles on playing status 6 years after an athlete's burnout profile was measured. Athletes were given the ABQ at the beginning of the study and then were categorized as having low burnout,

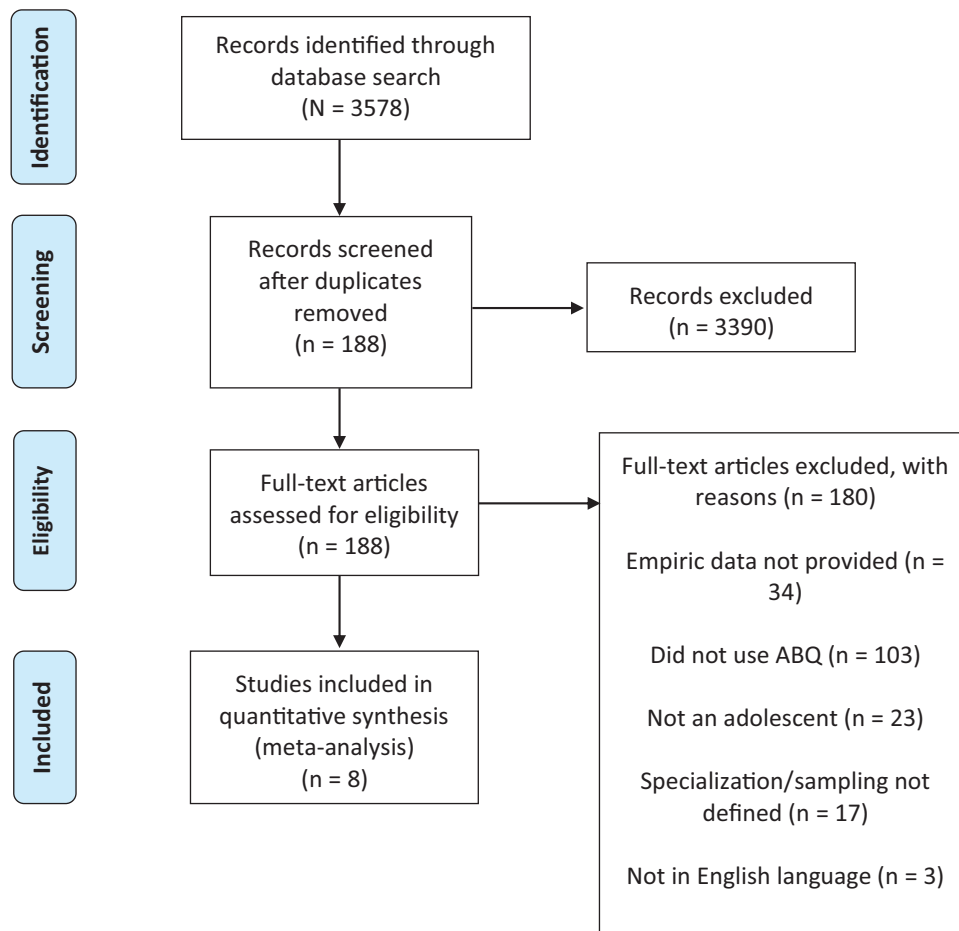


Figure 2. Flow diagram for study selection following the PRISMA-IPD (Preferred Reporting Items for Systematic Reviews and Meta-Analyses of individual participant data) guidelines.²² ABQ, Athlete Burnout Questionnaire.

high exhaustion, and high burnout. They followed up with these same athletes 6 years later to determine rate of dropout. The authors found that the average risk of dropout was 2.21 and 2.41 times higher for athletes with the higher burnout profile than the 2 other groups (low burnout and high exhaustion, respectively), indicating that higher burnout symptoms lead to an increased risk of dropout and lower performance. The ABQ scores obtained from this longitudinal study (Table 1) are the overall weighted average scores from the 3 groups (low burnout, high exhaustion, and high burnout).

The 2 studies that directly compared burnout between sport specialists and sport samplers had different conclusions regarding whether specialization caused increased levels of burnout. Strachan et al²³ measured ABQ responses between 2 groups: specialists and samplers. Those authors found that specialists scored significantly higher in the exhaustion dimension of the ABQ than did samplers ($P < .05$) but not in reduced sense of accomplishment or sport devaluation. It was hypothesized that this was due to burnout occurring over a continuum beginning with exhaustion and then leading to reduced sense of accomplishment and finally sport devaluation. Limitations

to this study included a small sample size, as well as athletes surveyed from multiple sports.

Russell and Molina²¹ evaluated 77 female athletes participating in soccer ($n = 40$), volleyball ($n = 29$), and tennis ($n = 8$) to compare burnout symptoms between sport specialists and samplers. Contrary to Strachan et al,²³ Russell et al found no significant differences between sport specialists and sport samplers across all 3 dimensions measured by the ABQ. Limitations to this study included a small sample size, as well as an all-female sample. Future studies should compare burnout symptoms between male and female sport specialists and samplers.

Meta-analysis: Comparing ABQ Scores Between Sport Specialists and Sport Samplers

Sport specialization status was defined in all 8 of the included studies. A total of 1371 (95.9%) athletes were included in the sport specialization group and 58 (4.1%) athletes were included in the sport sampler group; 2 athletes were not classified. From the athletes who were grouped by specialization status, 1422 (99.5%) completed the ABQ; 5 specialized athletes from Larson

TABLE 1
Data from the 8 Included Studies^a

Lead Author (Year); Country	Participants	ABQ Results ^b	Key Findings
Larson ¹⁶ (2019); Canada	N = 137 (0 samplers, 137 specializers), 32.85% male; mean age, 12.5 y; from 1 sport (swimming)	Specializers: RA, 1.90 ± 0.86 E, 2.59 ± 0.95 SD, 1.76 ± 0.93 Samplers: NA	No evidence of a direct link between ES indicators and increased burnout or dropout. LOE, 4
Russell ²¹ (2018); US	N = 77 (24 samplers, 53 specializers); 0% male; mean age, 15.8 y; from 3 sports (soccer, volleyball, tennis)	Specializers: RA, 1.73 ± 0.53 E, 1.93 ± 0.76 SD, 1.40 ± 0.49 Samplers: RA, 1.62 ± 0.62 E, 1.92 ± 0.71 SD, 1.48 ± 0.60	Female nonelite youth athletes, specializers, and nonspecializers were similar in sport motivations and did not experience elevated burnout symptoms. LOE, 4
Appleton ¹ (2012); UK	N = 231 (0 samplers, 231 specializers); 88.31% male; mean age, 16.9 y; from 2 sports (soccer, track and field); recruited from elite academies in England	Specializers: RA, 3.07 ± 0.74 E, 2.40 ± 0.84 SD, 1.80 ± 0.85 Samplers: NA	Amotivation and intrinsic motivation were significant mediators of the relationship between self-oriented perfectionism and burnout symptoms. LOE, 4
Gustafsson ⁹ (2017); Sweden	N = 256 (0 samplers, 256 specializers); 57.81% male (2 did not report sex); mean age, 16.9 y; from team sports (ice hockey, soccer, volleyball) and individual sports (track and field, gymnastics, golf); recruited from sport academy associated with Swedish sport national talent program	Specializers: RA, 2.50 ± 0.77 E, 2.17 ± 0.80 SD, 2.13 ± 0.88 Samplers: NA	Fear of failure was related to burnout and psychological stress in athletes. LOE, 4
Isoard-Gauthier ¹² (2016); France	N = 458 (0 samplers, 458 specializers); 54.14% male; mean age, 15.4 y; from 1 sport (handball); recruited from elite handball institutions in France	Specializers: RA, 2.56 ± 0.52 E, 2.60 ± 0.70 SD, 1.69 ± 0.66 Samplers: NA	Individuals with a “higher burnout” profile at time 1 were more likely to have stopped playing handball 6 y later than those with lower burnout profiles. LOE, 3
Strachan ²³ (2009); Canada	N = 74 (34 samplers, 40 specializers); sex not reported; mean age, 13.6 y; from 4 sports (swimming, rhythmic gymnastics, artistic gymnastics, diving)	Specializers: RA, 1.82 ± 0.54 E, 2.70 ± 0.93 SD, 1.83 ± 0.57 Samplers: RA, 1.65 ± 0.59 E, 2.03 ± 0.71 SD, 1.35 ± 0.49	Specializers reported higher levels of physical-emotional exhaustion and burnout than samplers. LOE, 4
Hill ¹¹ (2008); UK	N = 151 (0 samplers, 151 specializers); 100% male; mean age, 14.4 y; from 1 sport (soccer), recruited from UK centers of excellence in East Anglia	Specializers: RA, 2.35 ± 0.69 E, 2.28 ± 0.81 SD, 1.86 ± 0.92 Samplers: NA	Sense of self-worth was central to both socially prescribed and self-oriented perfectionism, and this association may have increased vulnerability to athlete burnout. LOE, 4
Gerber ⁶ (2019); Switzerland	N = 45 (0 samplers, 45 specializers); 64.44% male; mean age, 17.2 y; from 7 sports + other (soccer, handball, judo, volleyball, swimming, tennis, track and field, other); recruited from athletes attending Olympic sport classes in the northwestern, German-speaking part of Switzerland	Specializers: RA, 2.31 ± 0.72 E, 2.86 ± 0.63 SD, 1.62 ± 0.66 Samplers: NA	Athletes with high burnout symptoms showed a tendency to detach themselves from sport, thus fostering sport devaluation as a core symptom of burnout. LOE, 4

^aABQ, Athlete Burnout Questionnaire; E, exhaustion; ES, early specialization; LOE, level of evidence; NA, not applicable; RA, reduced sense of accomplishment; SD, sport devaluation.

^bValues are expressed as mean ± SD.

TABLE 2
Statistical Analysis of ABQ Results Compared With
Specialization Status^a

ABQ Variable Analyzed	No.	ABQ Score ^b	Difference in Means (95% CI)	P
Reduced sense of accomplishment			0.87 (0.67-1.08)	<.01 ^c
Samplers	58	1.64 ± 0.60		
Specializers	1364	2.51 ± 0.66		
Exhaustion			0.46 (0.24-0.68)	<.01 ^c
Samplers	58	1.99 ± 0.71		
Specializers	1364	2.44 ± 0.79		
Sport devaluation			0.41 (0.22-0.60)	<.01 ^c
Samplers	58	1.40 ± 0.54		
Specializers	1364	1.82 ± 0.54		

^aABQ, Athlete Burnout Questionnaire.

^bValues are expressed as mean ± SD.

^cStatistically significant difference between groups ($P < .05$).

et al¹⁶ and 2 specialized athletes from Appleton and Hill¹ did not take the ABQ.

Results from the z test are shown in Table 2. Athletes who specialized reported higher levels of burnout than athletes who did not specialize. Specializers had a greater sense of reduced accomplishment (difference of means [Δ], 0.87; 95% CI, 0.67-1.08; $P < .01$). Specializers also reported greater exhaustion (Δ , 0.46; 95% CI, 0.24-0.68; $P < .01$) and more devaluation (Δ , 0.41; 95% CI, 0.22-0.60; $P < .01$) than athletes who were samplers.

DISCUSSION

The results of this systematic review support the hypothesis that adolescent athletes who participate in sport specialization would experience greater burnout profiles than athletes who sport sample. The results showed that adolescent athletes who sport specialize had significantly higher scores in all 3 dimensions of the ABQ. Reduced sense of accomplishment had the largest difference in means between specializers and samplers (0.87; $P < .01$), followed by exhaustion (0.46; $P < .01$) and finally sport devaluation (0.41; $P < .01$). All 3 measures of the ABQ were statistically significant ($P < .01$) when compared between specializers and samplers, indicating that specializing in a specific sport can lead to increased levels of burnout.

Our study has findings consistent with many of the published consensus statements and review articles; however, few studies have directly compared burnout between athletes who are specializers and samplers. A study published by Gould and Udry⁷ in 1996 compared burnout in 30 sport-specializing tennis players versus 32 sport-sampling athletes. The results showed that the sport-specializing tennis players had higher scores in burnout, less input into training, and reduced motivation and reported being more withdrawn. This was one of the original studies published comparing burnout between sport-specializing and sport-

sampling athletes; however, it could not be used in our meta-analysis because an older version of the ABQ was administered.

Regarding specialization at a younger versus older age, a consensus statement by the AOSSM was published advising against early youth specialization because of increased levels of burnout and injury.¹⁵ In that statement, the authors cited a study by Fraser-Thomas et al,⁵ which demonstrated that youth specialization before the age of 12 is associated with increased burnout and dropout rates and decreased athletic development over time. Future research should compare levels of burnout between athletes who sport specialize before the age of 12 versus athletes who specialize after the age of 12. It should also be noted that, although burnout may be caused by different stressors based on the individual sport, burnout is a psychological condition that can present similarly in any sport (ie, reduced accomplishment, exhaustion, and sport devaluation). Further research should be conducted to identify the specific stressors in each sport that are associated with an increased risk of burnout.

Currently, no research is available showing whether burnout or reduced sport performance occurs first. One might hypothesize that burnout leads to reduced performance, but the opposite could be true, as well. Martinent et al¹⁸ showed that a reduced sense of accomplishment may precede emotional-physical exhaustion and devaluation in time. This indicates that there may be some "order" in which burnout symptoms occur. Future research should explore this correlation further.

An interesting aspect of the current study is the involvement of athletes from regional and national sports academies. Athletes from 5 of the included studies were recruited from academies of excellence, sport institutions, or Olympic sports classes. In the study by Appleton and Hill,¹ athletes were considered elite because "they demonstrated performance excellence in their age group and were exposed to specialist coaching and high performance developmental training in their chosen sport." These centers may provide their own set of unique stressors (eg, higher-intensity training) to which a nonelite athlete may not be exposed, but they may also provide resources to assist with physical and psychological health of the athlete (eg, recovery facilities, therapists). Future research could compare ABQ results from athletes in these national training centers versus athletes who participate and compete in more amateur environments to determine whether the academies play a positive or negative role in psychological aspects of sport.

This systematic review and meta-analysis is extremely relevant, as it is the first article to combine ABQ results from multiple studies into a meta-analysis to compare burnout in sport specializers and sport samplers. The analysis shows that specializers experience higher levels of burnout across all 3 dimensions than samplers, confirming the current literature and position statements advising against sport specialization in early adolescence. Encouraging sport sampling rather than specializing may lead to a lower risk of developing burnout symptoms, which can extend athletes' playing careers, as well as keep them more satisfied with their sport performance.

Limitations

This study has several limitations. Given the limited literature regarding burnout and sport specialization, only 8 studies were included in this systematic review and meta-analysis. The paucity of studies directly comparing burnout and specialization status required the use of the ABQ as the primary inclusion criterion, and athlete specialization status had to be determined by our coauthors. This method of classification also resulted in a low number of athletes being classified as sport samplers ($n = 58$); 24 of these were female and the other 34 did not have a sex reported. Although a large number of athletes met criteria for specialization ($n = 1364$), only 2 studies appropriately identified a sport sampler. For example, Jowett et al¹⁴ stated, “Sports from which [participants] were recruited included football, rugby, cricket, swimming, synchronized swimming, diving, and golf,” and multiple studies provided similar statements. From such a statement, it could not be determined whether athletes participated solely in these individual sports or participated in multiple other sports; therefore, this study had to be excluded. Furthermore, ABQ scores were reported for a low number of sports, and certain sports (eg, football, baseball, softball) were not included at all. Because the included studies were conducted in different countries, a potential exists for regional differences in sport training, which could lead to variation in athlete burnout.

Another limitation is that the ABQ results were comparable only with specialization status. The ABQ results were pulled from studies comparing burnout versus a measure other than specialization (eg, perfectionism, motivations), so these burnout scores could not be compared across sex, sport, or age unless the study specifically stated which burnout scores were attributed to a group. Furthermore, this study entailed a heterogeneous group of athletes because ABQ scores from multiple sports were used in this meta-analysis. Future studies should compare burnout in a large group of specialized athletes versus burnout in a large group of sampled athletes so sex, age, sport of participation, age of beginning specialization, and other personality traits can be measured to create a profile for burnout.

CONCLUSION

Adolescent sport specialization was associated with higher levels of burnout across all 3 dimensions compared with sport sampling. Avoiding sport specialization during adolescence may reduce the risk and severity of burnout symptoms. Future studies should compare burnout symptoms directly between sport specialists and sport samplers, as well as between younger and older sport specialists.

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