Parents’ Understanding of the Impact on Sport Specialization

A Synthesis of the Research Literature

A Synthesis Project

Presented to the
Department of Kinesiology, Sport Studies, and Physical Education
The College at Brockport
State University of New York

In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Physical Education
(Athletic Administration)

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12/11/2019
Accepted by the Department of Kinesiology, Sport Studies, and Physical Education, The College at Brockport, State University of New York, in partial fulfillment of the requirements for the degree Master of Science in Education (Physical Education).
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Abstract

The purpose of this synthesis project was to review the literature on parents’ understanding of the impact on sport specialization. An extensive literature review was completed in order to properly examine all the information available regarding the parent’s role when it comes to their child’s participation in sport and whether or not they are specializing in a specific sport. This review was done so by examining 16 peer reviewed articles on multiple web data bases. The research concluded that there should be a high emphasis on the child’s motor development at an early age (Goodway and Robinson, 2015). An athlete’s body should be allowed to grow naturally throughout their sport participation. It was also concluded as the child competes in sport, there should be a focus on having fun. Extended pressure from parents causes amotivation in their child (Sanchez-Miguel, Leo, Sanchez- Oliva, Amado, & Garcia-Calvo, 2013). This result could cause a drop in participation levels among youth athletes. It is critical to inform parents on the potential risk factors of early sport specialization. Further research must be conducted on this topic to help develop more information and data to aid with parent understanding.
Chapter 1 – Introduction

Background Information

Wilt Chamberlin, arguably one of the greatest basketball players of all time, played only basketball throughout his entire career. Usain Bolt, a world record holder and one of the top runners in the world, was a runner only throughout his life. Sport specialization in youth sports has become a growing trend and is erasing the concept of a multiple sport athlete. Athletes who are well versed and well-rounded in multiple sports are not as prominent as they once were (Coakley, 2010). However, in a 2016 study by Bell, Post, Trigsted, Hetzel, McGuine & Brooks, small schools have no choice but to have athletes participating in multiple sports because of low participation numbers in comparison to bigger schools that have a high volume of athletes (Bell, Post, Trigsted, Hetzel, McGuine & Brooks, 2016). Sport specialization's growth across the country has become the golden ticket for parents seeing their child achieve elite sport status.

Sport specialization has been described as intense year round training in one singular sport in hopes to gain elite status of that singular sport in the future (Sluder, Fuller, Griffin, Mcray, 2017). Sport specialization has also been classified in a journal article by Bodey, Judge & Hoover (2013), as an effort for athletic development that places a large focus on training in a single sport during the entire year. Alternatives to sport specialization are being explored due to issues associated with overuse injuries, burnout, and psychological frustration. Athletes have experienced these kinds of issues as a result from this intense training (Feeley, Agel, & LaPrade, 2016).
Burnout from sports and overuse injuries are continuing to rise, and sport specialization could be the root of the problem. The issue with overuse injuries has produced a number of case studies involving youth athletes with knee, shoulder, hip, and back related injuries, and also pressure from parents. In a case study on overuse conducted by Ferguson (2014), a 16 year old male pitcher was examined for his year round participation in baseball. The year round participation caused shoulder and elbow issues that resulted in significant absence from participation in baseball. As a result, these athletes struggle to keep up with the demands of the sport and are no longer motivated to compete (Stewart, Shroyer, 2015). In a 2013 study, conducted by Sanchez-Miguel, Leo, Sanchez-Oliva, Amado, and Garcia-Calvo (2013), it was found that parents support was the strongest way to predict whether or not their child would have fun competing in the sport. There was an exception however when parents placed a great deal of added pressure on their child, the study concluded the athlete would be less motivated to compete and enjoy the sport less (Sanchez-Miguel et al., 2013).

Parents push participation in sports on their children without the proper education of training volumes and understanding the risks of sport specialization. In a 2018 study, a survey was distributed to 1000 parents. 80% of those parents had no knowledge when it came to sport volume recommendations (Bell, Post, Trigsted, Schaefer, McGuire, Brooks, 2018). These parents encourage their young athletes to specialize at a young age and many of them do this directly and indirectly without even realizing it (Padaki et al., 2017). Even as they influence them to participate in only one sport, few make it to college on a scholarship. It's a very small chance the
athletes actually make it to the professional level at all, as most tend to drop out along the way (Malina, 2010). Parents have an impactful role in a young athlete’s participation in a sport, with potential hopes that they will obtain a scholarship in the future (Padaki, Popkin, Hodgins, Kovacevic, Lynch, Ahmad, 2017). However, the likelihood of receiving a scholarship is extremely low; the actual percentage is around 1.1% for boys and 1.2% for girls (Malina, 2010). This message needs to be relayed to all parties, including parents and coaches, so that everyone involved with the child’s life is aware of the critical information about potential injuries risks and number of burnouts (Stewart, Shroyer, 2015). The importance should be placed on the developing athlete as their bodies continue to develop, and should be introduced to multiple training programs, before they look to compete at a high level (Goodway, Robinson, 2015).

**Statement of the Problem**

Parents play a critical role when it comes to their youth athlete’s career. These include, paying expenses for travel teams, traveling with the athlete, housing on the road, sport related equipment costs, paying for personal trainers or training camps and even guiding them into specific sports. Again, they influence their child with every interaction, directly or indirectly, without even realizing it at times (Padaki et al., 2017). Typically, the parents of these athletes participated in a sport when they were children, or at one time, were coaches themselves of a specific sport or coached their child previously. Parents also could have watched a certain sport with their child. These simple interactions could result in pressures without even the parents realizing it.
The potential risks are not always examined by the parents when it comes to sport specialization. Parents overlook their child’s wellbeing in hopes for their children to receive a division I scholarship (Malina, 2010). Future success in a specific sport is placed at a higher priority when at a younger age. The development of the athlete and having fun should be placed at a higher priority (Goodway & Robinson, 2015). Considerations for different sport participation should be put into place so that the child’s body has the opportunity to grow and develop more naturally (Goodway & Robinson, 2015). As stated in a case study once conducted by Ferguson and Stern (2014), “A case of early sports specialization in an adolescent athlete is that education process about sport specialization is focused on the athlete” (p. 377). There seems to be a lack of education for the parent, who is most likely responsible for them being involved and participating in one sport. If there was proper education for the parents, this may not be as prevalent of an issue in sports. As increased specialized participation rises, the problem with injury also continues to be prevalent as youth athletes are being injured at a rate of 46-54% due to overuse injuries (DePhillipo, Cinque, Kennedy, Cahla, Moatshe, LaPrade (2018).

**Research Question(s)**

1. Do parents understand the risks of sport specialization?
2. What factors play a role in sport specialization?
3. What potential issues and benefits does sport specialization have to offer?
4. What are parent’s roles in sport specialization?
Purpose of the Study

The purpose of this study is to review the literature on parents’ understanding of the impact on sport specialization.

Operational Definitions

Sport Specialization- Intense training in one sport, which would be considered greater than eight months out of the year (Sluder et al., 2017)

Overuse Injuries- Any type of injury that is caused by repetitive trauma to the muscle or joint area, which could also happen because of poor training techniques (Malina, 2010)

Burnout- It is the perceptions by the athlete that he or she cannot meet the physical or psychological demand placed upon him or her (Malina, 2010)

Sport Sampling- It is the movement of engaging youth in a variety of sport, compared to intense training in one singular sport (Goodway & Robinson 2015)

Parents- Persons who brings up and cares for another (Merriam-Webster, 2019)

Training Volumes- Athletes training levels throughout sport participation (Bell, Post, Trigsted, Schaefer, McGuire, Brooks, 2018)
Assumptions

1. All the participants involved in the studies answered all questions truthfully and to the best of their ability.

2. The instruments and data are reliable and valid.

3. The literature review process was thorough and fully comprehensive.

4. While the research was being conducted, the athletes put in acceptable effort when having to perform tests for the research process.

Delimitations

1. The focus would be on articles involving youth athletes.

2. Articles examined involving parents.

3. Articles reviewed and used for the research occurred between 2009 and present.

4. Journals that are scholarly and peer reviewed.

Limitations

1. Limited amount of research has been conducted on parent’s understanding on sport specialization.
Chapter 2 – Methods

The purpose of this chapter is to review the methods used to review the literature on parents’ understanding of the impact on sport specialization. The studies collected for this synthesis were located using the EBSCO database from The College at Brockport’s Drake Library. Within the EBSCO database the following databases were searched: SPORTDiscus and Academic Search Complete. Within these databases a total number of 16 articles met the criteria for inclusion as part of the critical mass within this literature review. In order for an article to meet the criteria for selection in this synthesis it must have been published between 2009-present. This will provide the synthesis with the most up to date and current information available. Other criteria for selection included full text scholarly and peer reviewed articles. Having scholarly and peer reviewed articles provides more validity within the articles and better overall quality. Other articles or sources selected as part of this literature review provided context about the topic, background information and supplemental information to complete the review. All articles and sources are appropriately cited in the reference section of this paper.

In order to gather valuable articles for this synthesis, certain keywords and phrases were used when searching the data-base. The first keyword searched through SportDiscus and Academic Search Complete was sport specialization that resulted in 475 and 633 number of hits between both databases respectively. These keywords were used to start the process because they are the basis for all of the research that is being conducted. Sport specialization is a broad topic that is discussed in the sports world and is very broad overall. I determined this would be a
great starting point for the research process. The next group of keywords used were sport specialization and parents which resulted in 34 hits. The focal point of the research is to examine whether or not parents understand their impact and understand the potential risk factors involved with single sport participation. It was important to examine articles that involved parents whether interviews with parents or feedback from them about their child to better understand their thoughts throughout the process. The next group of words used were sport specialization, parents, and youth which yielded 23 hits. Adding in the word youth helped narrow down articles to better get grasp on whether or not parents with young children understand what sport specialization really is. Another combination of key words that were put together were sport specialization and sport sampling, resulting in 18 total articles. Some see sport sampling as a potential alternative to sport specialization, especially at a young age. It was important to utilize this concept in the sport to determine whether or not parents have weighed that out as potential options for youth.

Articles that were selected for use in this synthesis were scholarly and peer reviewed articles that were full-text. Also, when selecting articles for use in this synthesis it was important that each article selected had valuable information related to parents’ understanding and the impact of sport specialization.

Specific criteria were used in order to be a part of the literature review. All of the articles selected were based on the literature surrounding whether parents have an understanding and realize the impact of sport specialization. Participants in the studies reviewed were athletes, coaches and parents.

The critical mass for this synthesis is comprised of 8,062 participants. Within the articles used for the literature review there was a total of 4,233 male athletes, 1,905 female athletes, and 1,924 parents: 816 male parents and 1,108 female parents.

Data was analyzed using the following methodologies for the studies. Under review data was measured via a cross sectional study and analyzed with frequencies, proportions, mean values, and standard deviation Chi-Square was used consistently to analyze the data collected. Questions that utilized the Chi-Square Tests of Independence used a five point Likert scale for its assessment. Data was gathered from large population of athletes and then was analyzed by looking at bone, muscle, tendon growth, fascia role, sensory development, and other implications for movement. There were various case studies conducted and the
results were analyzed through MRIs, radiographs, and X-rays. Software, like, Qualtrics, was utilized as well to facilitate the data responses they received.
Chapter 3

Literature Review

The purpose of this chapter is to present a review of literature on parents’ understanding of the impact on sport specialization. In chapter three, the articles included in the critical mass will be reviewed and discussed. The following topics will be the focus of the literature review and will be organized into three main themes with two sub-categories: participation in early sport specialization, effects of sport specialization: *effects of overuse injuries and effects of burnout*, parent’s impact and understanding on sport specialization.

**Participation in Early Sport Specialization**

This journal article helps to establish the definition of early sport specialization is. Padaki, Popkin, Hodgins, Kovacevic, Lynch, Ahmad (2017) conducted a study, “Factors That Drive Youth Specialization.” Its purpose was to quantify the driving force behind youth specialization. Padaki et al. (2017) hypothesized that there were multiple influences that included intrinsic drive for success and extrinsic pressure from individuals like coaches and parents. “Participation levels across the U.S. has increased significantly, as more than 30 million children participate in sports across the country” (Padaki et al., 2017, p. 532). Of the 30 million participants, 2.6 million report sport related injuries annually. The underlying issue seems to be overuse injuries as a result of early sport specialization.

The study was conducted through a two sectioned survey: the first based on the children’s demographics including, age, sex, level of specialization, injury and
surgical history. The second comprised of 15 questions which focused on the evaluating factors that influenced the player’s engagement in the sport. The survey was distributed to 254 athletes between the ages of 7-18 years. 235 of those 254 athletes responded. A waiver was distributed to allow completion of the survey with parental consent. The 15 questions evaluated the athlete’s burnout levels, psychological pressures of intrinsic enjoyment and pressure from parents, and how much time was invested into the sport (Padaki et al., 2017). All 15 questions were evaluated through a five point Likert scale. Athletes ten years and older were instructed to complete the survey without parental help. Athletes under the age of ten were allowed to consult their parents for help. All data collected was through a survey software called Qualtrics. Chi-square tests of independence were used to assess the frequency of responses from the five point Likert scale.

The results of the study revealed the average age athletes began to specialize in a sport was eight years old, with a plus/minus of almost four years. 74%, or 174, of the athletes had reported a sport related injury which ranged from ankle sprains, to full anterior cruciate ligament (ACL), or ulnar collateral ligament tears (Padaki et al. 2017). 73 athletes stated they only focused on one sport. 136 explained they played a few sports, but had a favorite, and only 26 said they liked the sports they participated in equally.

The remaining statistics focus on the results from the 15 question portion of the survey on the factors involving engagement. Of the participants that completed the questions, 71% wanted to compete at the college or professional level. An even higher percentage of 84% wished they were able to play more than one sport. 30%
had been told by their coach to not play another sport and 22% by their parent. 70% believed their social lives suffered, due to participation in a sport, and 60% of these athletes compete at least nine months out of the year (Padaki et al. 2017). The study showed the many extrinsic factors involved with sport specialization at a young age. Excess pressure from parents contributes to their burnout levels throughout participation. This paired with overuse injuries is a notable reason for injuries in sport.

A study titled, “Early Single-Sport Specialization: A Survey of 3090 High School, Collegiate and Professional Athletes,” was conducted by Buckley et al., (2017). The study contributes to the review of literature because its purpose is comparing early sport specialization with the rate and age chosen to specialize, yearly participation levels, and athlete’s perception of injury.

The study was conducted from 2015-2016. A survey was distributed to 3,090 athletes (503 high school, 856 college, 1,731 professional athletes) which consisted of questions about demographics, current sport commitment levels, injury that caused time away from sport participation and required treatment, their future athletic plans, and perspective on specialization. The survey was completely voluntary and anonymous. The survey was completed with their peer groups, but not under the supervision of parents or coaches.

The results of the study determined that a higher percentage of current collegiate athletes specialized in a single sport when they were a child, 45.2% for high school, 67.7% college, and 46% of professional athletes (Buckley et al., 2017). The mean age for single sport participation was almost 13 years plus/minus two
years. 39% of the current high school and 42.3% of college athletes recalled higher sport related injuries when compared to the 25.4% of professional athletes. Of the professional athletes involved in the study, 61.7% believed specialization helps athletes play at the higher level compared to the 79.7% of high school and 80.6% of college athletes. But only 22.3% of the professional athletes would want their child to specialize in only one sport. It was found that high school athletes recalled a higher chance of receiving an injury due to sport specialization than college or professional athletes. The results concluded that current high school athletes are choosing to specialize at an earlier age than the current professional or college athletes. This overtraining continues to be a risk factor for youth athletes participating in sport. Currently, professional athletes specialize at a later age than high school athletes. This suggests that early sport specialization may not be related to participation in professional sports (Buckley et al., 2017).

**Effects of Sport Specialization**

In addition to the prior article reviews, Goodway and Robinson, as part of a 2015 study, examined the argument for early specialization versus sports sampling from a physical growth and motor development perspective. They utilized three developmental frameworks: Mountain of Motor Development, Developmental Model of Sport Participation, and Spirals of Engagement Trajectory Model. These frameworks were selected to help solidify their case of a wide range fundamental motor skill competence. It is vital throughout the beginning of a young athlete’s career before considering sport specialization early on in participation. Arguments supporting and against sport specialization, growth of the athletes, and motor
development were all examined. An argument for early sport sampling was to help develop broad fundamental motor skills to utilize in multiple sports and help with their physical maturity before specializing. The journal article examines the argument for and against sport specialization. It does so by analyzing a focus on motor development and physical growth.

The Mountain of Motor Development is a framework that provides a valuable perspective in considering early sport specialization versus early sport sampling. The Mountain of Motor Development helps the athletic population understand the importance of biology and environment in sport performance throughout the developmental stages (Goodway and Robinson, 2015). The Developmental Model of Sport Participation helps show the trajectory the athlete will develop throughout their youth sport participation. There are three potential trajectories including, participating in a sampling of recreational sport participation through deliberate play, later specialization in elite sport performance through early sampling of sports, and elite performance in sport while specializing at an early age (Goodway and Robinson, 2015). The final framework is the Spirals of Engagement Trajectory Model. This model shows the relationship between motor competence and physical activity. When an athlete competes during their youth it gives them the opportunity to develop their basic motor skills early on in adolescence. Those athletes that sample multiple sports, with a larger range of physical activity will encourage a better-rounded development. As they continue their athletic career, athletes will engage in multiple sports that will further develop their motor skills (Goodway and Robinson, 2015).
Based on the three theoretical frameworks, a developmental trajectory approach was designed to follow a specific time frame and strategy. Between the ages of three to seven years old, athletes should be developing their basic fundamental skills through broad based instruction athletic programs, not through sports specialization (Goodway and Robinson, 2015). When the skills are applied to a sport, athletes will be able to become competent in that sport. When the athlete is in the age range from seven to eleven, they should continue to sample sports and consistently fine tune their motor skills to demonstrate their motor competence. Throughout their middle years (ages 11-13), athletes can continue to sample in multiple sports, but begin to consider different athletic paths. Athletes can proceed with sport sampling, which will continue to help develop their skills or to become more deliberate with their sport specialization. Finally from the ages of 14 to 18 years old, the athlete can have the opportunity to engage in the sport that meets their needs, whether that be participation in a variety of sports or the ability to enhance their skills in one specific sport (Goodway and Robinson, 2015).

This approach has the ability to maximize development, increase participation, minimize dropout levels, and provide athletes direction that caters to their unique skills which will continue to keep their interest levels heightened in sport. It is important to place a higher focus on skill development and allow the athlete to make more decisions with their athletic career. In this way there is the possibility for turnover and longer participation in sports throughout their lifetime.

As noted in the previous article conducted by Goodway (2015), there should be a gradual progression, in regards to an athlete’s body throughout participation,
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as they develop. A young athlete should not be thrown into intense high volume
trainings immediately, and parents should begin to learn that while their child
competes. In a journal article by Post, Trigsted, Riekena, Hetze, McGuine, Brooks,
and Bell (2017), “The Association of Sport Specialization and Training Volume With
Injury History in Youth Athletes,” the background discussed that recommendations
already exist in regards to encouraging youth athletes to participate in sports.
Consistent recommendations are to not specialize in one sport, limit consistent
participation to less than eight months each year, and limiting participation hours to
less than the child’s age. If the youth athlete is 14, participation hours for that week
should be no more than that. The primary purpose of this study was to determine
the association between sport specialization and injury history in adolescent
athletes (Post et al., 2017, p. 1406). A secondary purpose of this study was to
determine the relationship between sport volume recommendations and injury
history.

The data was collected from 2,011 athletes between the ages of 12-18 that
completed a questionnaire answering questions about their specialization status,
weekly and yearly participation volume, and past injury history. Of the 2,011
athletes involved, 989 were female and 1,022 were male athletes. The participants
were recruited from summer athletic tournaments, competitions, and practices
around the state of Wisconsin. Participants also had to be active in sports for the
past 12 months. Their status as specializers was classified using a three point scale.
The scale was calculated by three questions: (1) if the athletes quit other sports to
focus on their main sport, (2) if the athletes viewed their primary sport as more
important than other sports, and (3) if the athletes trained or participated in their primary sport more than eight months out of the year. The response was calculated with ‘yes’ being one point and ‘no’ being zero points. When scores were in the range of zero to one, athletes were classified as low specialization; two being moderate specialization, and three being highly specialized. Athletes also had to report how many months each year they participated in their primary sport. This was used to determine whether or not athletes were meeting or exceeding sport volume recommendations. They exceeded hours when they participated over their numeric age. Participants were grouped together based on injury type, meaning if athletes had ankle sprains or an ACL tear they would be grouped together.

The results of the study concluded that sex and age influenced specialization levels from low to high. It was found that those who specialized were more likely to be female at 53% peaking at age 15. It was also found that highly specialized athletes competed in their primary sport at an earlier age, for more than 8 months of the year, and more than their numeric age hours per week. Around 15% of the sample reported having lower extremity overuse injuries, 6% of participants reported a history of upper extremity injuries, and 8% reported having a history of concussions. The most common injuries reported were 352 ankle, 270 wrist/hand, and 215 head/neck injuries. Reported overuse injuries were 91 knee, 73 shoulder, 66 ankle, and 58 hip injuries. It is important to note from this study that a relationship exists between sport specialization and injury history. The percentage of reporting a previous injury was 45% to 91% higher of those that were highly specialized compared to those who had a low level of specialization. The other
percentage found was that the odds of reporting a previous injury was 26% to 85% higher in athletes who exceeded sport volume recommendations.

**Effects of Overuse Injuries**

As previously discussed, the effects of sport specialization can have both a positive or negative impact on an athlete’s body. This portion of the literature review focuses more on the effects of overuse injuries while athletes are specializing in a specific sport at a young age (Ferguson & Stern, 2014). In a case study, “A Case of Early Sports Specialization in an Adolescent Athlete,” describes a 16 year old elite level pitcher who participated in high intense volumes of practice at young age. This high intensity training led to serious throwing related injuries. The study illuminates the origins of early sport specialization (ESS) along with risk and benefits. The literature describes ESS as high intensity and volume at a young age, minimal time off, highly structured participation, exclusion of multiple sports initiated by parents or coaches, and participating to achieve a higher goal (Ferguson & Stern, 2014).

A 16 year old pitcher was brought to a sports chiropractor with multiple injuries. The injuries included pain in the athlete’s right shoulder and elbow, left hip, and lower back. The listed injuries hindered the athlete’s performance and caused a significant absence from the sport. He began playing baseball at age of five; he played year round while engaging in highly structured practices two to three times per week. The participant was becoming an elite level athlete and began to have a higher work load during competition. Typically, leagues have pitch counts to help keep athletes healthy. This league, however, had no pitch counts or limits and
practices did not have a pitching machine. The athlete made the move to Canada where his participation levels dropped significantly and he participated mainly during the summer months. This is where the athlete began to notice low levels of pain in the back and hip area. As he got older, he participated with a local AAA team and his intense practices became more frequent, and he trained for ten plus months of the year. This is where elbow pain began to persist, but did not interfere with the ability to compete.

During the next season of competition, he was playing on two travel teams that led him to compete in three to seven games per week. The pain in the elbow was so great that he could no longer pitch or swing the bat. After an offseason of rest, the athlete participated in a tournament and reported significant shoulder pain to the point of no longer being able to compete. He was referred by a sport physician to receive a magnetic resonance angiography (MRA) where it was shown that he had a type II superior labrum anterior-posterior (SLAP) lesion in his right shoulder.

As a result of the study, some items were considered to help youth athletes. The early stages of participation in sport should be focused around having fun. As an athlete progresses through their career, there should be more focus on skill development. It is important that athletes and caretakers alike are educated properly about safe participation to promote athletes overall wellbeing. It is beneficial for chiropractors to take a sport specific approach when it comes to providing advice and care to athletes. It is important to understand the correct time to specialize in order to promote proper growth and success in their sport.
Supplementing the previous article, this journal article discusses the effects of year round participation on youth skiers’ bodies. Furthermore, the literature highlights continued risk of overuse injuries with extensive participation in sport. “Patellofemoral chondral defect in preadolescent skier: A case report in early sport specialization” (2018) is another case report conducted by DePhillipo, Cinque, Kennedy, Chahla, Moatshe, and LaPrade. The background of the literature suggests that specialized training could contribute to overuse injuries. The purpose of the case report was “to describe a patellofemoral articular cartilage defect of the knee in a preadolescent skier due to overuse and repetitive microtrauma as a result of ESS” (DePhillipo et., al 2018, p. 131).

Verbal consent was obtained from both the parent and athlete prior to the literature’s publication. A healthy 11 year old male competitive alpine skier was the subject being examined. He reported having constant knee swelling and persistent anterior knee pain (AKP) without any knowledge or evidence of a specific incident or history of injury. This athlete competed six days a week during his season and trained year round while specializing in downhill ski racing. The athlete notified his coaches and his parents of the pain and was prescribed a two-week rest period with further examination of the knee by an orthopedic. After a six week period of knee strengthening, the athlete returned to the orthopedics due to reoccurring swelling that continued beyond week six. The athlete continued to state that there was no specific fall that could be attributed to this consistent knee pain. The pain caused the athlete to have a slight limp, but he still had full range of motion in his knee with the swelling, no crepitation noted, and knee integrity was maintained.
Radiographs were examined as part of the data collection process for the athlete. The athlete had a bipartite patella, meaning a separated patella bone that never fused together, but no other abnormalities. The athlete also had an MRI and it showed that the athlete had an articular cartilage defect. The patient had a diagnostic arthroscopy, which also revealed a cartilage defect. Upon learning this, the athlete underwent a chondroplasty, a surgical procedure to smooth damage to the patella cartilage. The athlete began physical therapy post-surgery. The athlete was able to bear weight on the knee on a pain basis for two weeks. A large focus of the rehabilitation process was rest from skiing. 12 weeks after the initial surgery, the athlete had the ability to walk normally, had no knee swelling, full range of motion, and no patellar crepitation. At 12 weeks post-surgery the athlete was cleared to return to full activity and returned to competition at 15 weeks post-surgery.

As a result of the study, there has been growing evidence that the focus on one sport with excessive repetition of set movements and stress to the body can lead to unique pathology due to overuse. 46% to 54% of youth injuries are due to overuse (DePhilipo et al., 2018). This rise in overuse is causing concern about the increase in the trend of sport specialization. This case report provides information on the consequences of overuse and skeletal immaturity associated with ESS in young skiers. (DePhilipo et al., 2018)
Effects of Burnout

Beyond overuse injuries having an effect on youth athletes, burnout also plays a role and is becoming a concern with intense sport participation. This is another factor when it comes to dealing with effects of sport specialization and ties into the review of the synthesis because of its prevalence in early sport specialization. In a journal article titled, “A Comparison of Female Youth Sport Specializers and Non-Specializers on Sport Motivation and Athletic Burnout” by Russell and Molina (2018), the researchers sought to examine female athletes’ sport motivations and athletic burnout, according to whether they specialized in one sport. There were 77 female participants involved in the study at Midwestern regional universities. The athletes involved in the study participated in soccer, volleyball, and tennis (Russell and Molina, 2018).

The data was measured in a variety of ways. The first being the athletes completed a survey that included questions regarding their demographics, specialization status: whether they specialized or not, and what level they competed at, whether that be junior varsity or varsity level. The participants were asked their average participation hours in competition and practice per week. The questions were measured on a four-point Likert scale with four being ‘always’ and one being ‘never.’ The second way data was collected was by using the Sport Motivation Scale II (SMS-II). This scale measured their sport participation motivation and contained 18 items that assessed the six types of motivation. The motivations were intrinsic regulation, integrated regulation, identified regulation, introjection regulation, external regulation, and non-regulation. The items on this scale were measured on
seven-point Likert scale. The final tool for data collection was the Athlete Burnout Questionnaire (ABQ). This instrument assessed three sub-scales of burnout: reduced sense of accomplishment, emotional and physical exhaustion, and sport devaluation. The responses for this were measured on a five point Likert scale and a global burnout index was used to calculate the mean score from the sub-scales. Data was analyzed using a software compatible with Windows. Statistics were processed for the data measures. A multivariate analysis of variate (MANOVA) was used to examine sport motivation in those who specialized in a sport and those that did not. Another MANOVA was conducted to examine athletic burnout differences between the sport specializers and non-specializers (Russell and Molina, 2018).

Of the 77 participants, 69% said they only participated in one sport. The mean age for those that began specializing in one sport was around 11 years old. The average age of individuals who did not specialize was 16 years old. The first MANOVA examining sport motivation indicated that sport motivation was not influenced by specialization status. The second one-way MANOVA also showed that athletic burnout was not influenced by specialization status. From all three data collection methods, it was concluded that static activities at practice resulted in positive association with lack of motivation to participate. Activities that involved more simulation resulted in negative association with amotivation; having a lack of motivation, and reduced the athlete’s sense of accomplishment. The only significant predictor of burnout was amotivation. This amotivation was strongly correlated with a reduced sense of accomplishment in the sport (Russell and Molina, 2018).
Parents’ Understanding and Impact on Sport Specialization

A journal article titled, “Parents’ Awareness and Perceptions of Sport Specialization and Injury Prevention Recommendations” conducted by Bell, Post, Trigsted, Schaefer, McGuine, Brooks (2018), sought to examine parent’s knowledge of sport volume recommendations and examine their perceptions towards specialization.

Athletes were pulled from athletic tournaments, competitions, and practices. The data that was gathered was through a cross sectional survey and was distributed to 1,000 parents of youth athletes. One specific criteria was that the parent had to have a child between the ages of 10-18 who participated in organized sports over the past year. The surveys were entirely anonymous and consisted of ‘yes’ or ‘no’ style questions and questions based off a one to five point Likert scale. The questions consisted of demographic questions about the parent and the child, about their various perceptions of sport specialization, and their knowledge of safe sport recommendations. A panel examined the survey to establish its validity. The data was collected and summarized through a variety of measures. Frequencies, proportions, mean values and standard deviations categorized it. The study utilized Chi-Square analyses to determine whether or not the parent’s sex had an influence on any of the distributions.

The results were calculated and showed various percentages from the questions that were answered. Of the 1,000 parents surveyed, 80% of them had no knowledge of proper sport volume recommendations. 24% of parents thought it was okay to participate in multiple leagues of the same sport. Almost 61% of
parents considered it appropriate that they participate in multiple leagues of a different sport. Parents were concerned with injuries as a result of participation in youth sports, although only a little over half (55%) believed sport specialization was a problem. Of the 80% of parents who did not understand proper training volumes, only 43.3% of them believed year round sport participation increased the chance of having an overuse injury (Bell et al., 2018). When it came to concerns about injury and year round training, female parents were more likely to be concerned than their male counterpart.

The recommendations for proper sport volumes among youth athletes is not a well-known concept. Parents are concerned about their child when it comes to injury, but have a lack of proper education when it comes to participation in sports.

In addition to the prior article, Padaki, Ahmad, Hodgins, Kovacevic, Lynch, Popkin (2018), dive further into the topic looking to uncover parents influence on sport specialization. The journal titled, “Quantifying Parental Influence on Athlete Specialization” (2018), looks to establish a parent’s role in sports.

The background discusses that sport specialization has been connected with decreased enjoyment, burnout, and a greater risk of injury while still having no definitive evidence of future success in the sport (Padaki et al., 2018). The purpose of the study was to assess parental influence placed on young athletes to specialize. It was hypothesized that parents directly and indirectly placed pressure on athletes who specialize. The methodology involved began with a survey distributed to a medical team. Surveys were also given to parents involved with the senior author’s orthopedic pediatric patients. The survey was designed to comprehensively
understand how involved parents were in their child’s athletic careers (Padaki et al., 2018). A team of pediatric and sport medicine orthopedic surgeons, parents, coaches, and athletic trainers developed the survey. The survey consisted of two parts: one, a section on demographics such as child’s age, sex, favorite sport, level of specialization, injury history, along with a surgical history. The second portion was an 11 question evaluation of the parent’s involvement in their child’s sport specialization. The questions consisted of parent’s time and commitment, perception of child’s enjoyment, placement of direct pressure to specialize and the level of coaching the child receives (Padaki et al., 2018). The questions were evaluated through the use of a five point Likert scale. The responses were collected via Qualtric, an independent survey software. Chi-square tests of independence were used to assess the frequency of responses.

Below are the results of the study yielded 201 total participants from the initial 211 parents. 71.4% of parents who completed the survey were female and 58.2% of the athletes were male. When it came to the athlete’s medical history, 72.1%, or 145, of the parents stated their child had experienced a sport related injury. These injuries ranged from tendinitis all the way to anterior cruciate ligament (ACL) ruptures requiring surgery. 67 parents said their child focused on one sport, 107 said their child had a favorite sport, but played multiple sports, and 27 parents said their child liked all sports equally. Turning the focus of the study on the 11 question survey, the survey was measured on a one to five Likert scale. 57.2% of parents hoped their children would play at the college level or professionally, 58.8% believed their child desired the same (Padaki et al., 2018).
Less than 50% of parents (45.3%) stated they never influenced their children to focus on a single sport. 6.3% would hold their child back to provide them with an athletic advantage. Of the 17.8% parents with specialized children, they said they would influence them “a lot” or “very much.”

As a result of the study, it is seen that a positive feedback connection exists between parental involvement and youth specialization. Athletes are beginning to specialize more before the age of 12. The study shows some information on pressures that some parents place on their children to specialize. Parents of athletes who specialize in one sport sometimes have personal aspirations and have expectations that they will compete at a higher level whether that be at the college or professional level. The study also shows the relationship between high volumes of deliberate training and the occurrence of an injury. Athletes that have large aspirations, paired with more involved coaching, that practice and compete more may find themselves at a higher risk of injury. As a result of the study, parents do contribute directly and indirectly to youth specialization (Padaki et al., 2018). Parents and coaches alike should monitor athlete safety along with how they may potentially influence their child.

‘The Importance of Parents’ Behavior in their Children’s Enjoyment and Amotivation in Sports” (2013), done by Sanchez-Miguel, Leo, Sanchez-Oliva, Amado, and Garcia-Calvo main focus was to, “examine the relationship between motivational orientations and parents behavior with regard to the players’ motivation orientation, motivational climate, enjoyment and amotivation” (Sanchez-Miguel et al., 2013, p. 169). Players find that they would prefer supportive
comments and criticism about their mindset towards the game, how good they are at the sport, and overall effort compared to behavior that pressures athletes to influence them to perform at a higher level. Motivation has always been around, but is becoming a large factor in promoting safe and appropriate physical activity. It is important to examine the family dynamics and outside factors that play a role in the athlete’s participation in sport.

The study had two hypotheses, the first was parents’ task orientation and motivation would have a positive impact on their child’s task orientation and motivational climate. The second hypothesis was that the pressure the parents put on their kids would have a negative impact on their youth athlete’s enjoyment levels, and would negatively impact an athlete’s motivation to continue with the sport. The participants involved with the study were 1,446 in total. Comprised of 723 athletes and 723 parents, of the parents 351 were mothers and 372 were fathers. As far as athletes, there were 561 male athletes and 162 females (Sanchez-Miguel et al., 2013). All the athletes were involved in some sort of group from basketball, handball, football and volleyball. Each group were selected by multi-step simple random sampling from an area in Spain and then randomly assigned clubs in each city. These clubs were selected based on involvement levels and their commitment. There were multiple measures of the study: the Perception of Success Questionnaire was used to establish youth athlete’s goal orientations based off of 12 items related to task and ego orientation, and the Parents’ Involvement Sport Questionnaire was used to measure parents’ involvement meaning their behavior, support and comprehension, active implication, and pressure (Sanchez-Miguel et al.,
The final two measures were the Sport Commitment Questionnaire, which was used to establish enjoyment levels based on a five-point Likert scale, and the Sport Motivation Scale, used to establish motivation in a sport also using a five-point Likert Scale.

The study was conducted using correlational methodology, measuring the parents and athletes at the beginning of the season. Prior to the study, the general purpose was explained to coaches and parents alike. Athletes would complete the questionnaires in the changing room and it encouraged athletes to ask questions. The final responses remained confidential. For the parents’ responses in the study, only the parent who was most involved in the child’s sport answered the questionnaire. This was established through factors such as who brought them to games, practices, and who was most interested in the sport. Data was analyzed using SPSS 19.0 statistical package to establish the nature of the data. The K-S test was for independent samples to verify the normality of the group, run test for randomness, and Levene’s Test for Randomness which tests the equality of two variances for a variable between two groups (Sanchez-Miguel et al., 2013).

The results of the study concluded that the athletes’ and parents’ motivational orientations were similar, both scoring low in ego orientation and task. Both athletes and parents had low levels as far as negative connotations of athletes’ enjoyment and parents’ pressure when compared to the variable that would imply positive behaviors. Athletes’ enjoyment and amotivation had an important relationship with parents’ behavior, meaning when parents pressure their children in a sport then the athlete’s motivation and enjoyment was lower. One of the tables
in the literature stated that parents’ support was the strongest predictor of their child’s enjoyment when competing. However, when parents put pressure on their child, the less the child would enjoy and be less motivated to continue the sport (Sanchez-Miguel et al., 2013). The main conclusion of the study is to have proper motivation and enjoyment, the parent’s supportive behavior must be promoted while also lowering their pressure on the athlete. This allows for more fun and less emphasis on competition and winning. Parent’s behaviors need to be continually examined when it comes to pressure in sports.

The results of this chapter was to review the literature on parents’ understanding of the impact on sport specialization. The sections of this literature review were used to supplement the overall purpose of the study. The initial review was to establish participation in sport, specifically at a young age, to get a basis of who is participating in sport and begin to focus on the effects. The second review, along with its two subsections, examined the effects of sport specialization. These sections discussed the overall effect, the effect of overuse injuries and the effect of burnout throughout participation. The final section, which is the theme of the study, was understanding the parent’s impact and understanding on sport specialization.

While there was some indication that parents push for sport specialization, and don’t understand proper training volumes, they place an added pressure on their children unnecessarily in hopes for elite status and future success. The results were not entirely conclusive and further research should be conducted on the topic.
Parents’ understanding of the impact on sport specialization was the focal point of this synthesis research. The research questions sought to establish whether or not the parents played a role in their children’s sport specialization, the effects of sport specialization in youth sports, and whether or not issues arise from this. Sport specialization has the potential to cause various negative effects on an athlete at a young age. Whether it be potential for overuse injuries, improper motor development, or psychological pressures from parents to become successful in their sport. There was evidence throughout which concluded the parent’s role in encouraging early sport specialization by hoping their child would compete at the next level. Parents also didn’t completely understanding correct training volumes for their child, as they competed in sports.

Discussion

This discussion gives insight on the initial research questions and how they were answered throughout the literature review process. There was significant literature on the topic and each study yielded important results essential to the purpose of this study. The studies that were examined established that when parents place too much pressure on their children, their enjoyment levels drop along with their motivation to continue the sport (Sanchez-Miguel et al., 2013). The researchers involved alluded to the potential benefits of sport specialization, but some parent’s lack of understanding about sport specialization has been an issue. Parents hoped their athlete would participate in college athletics by acquiring a
scholarship or the professional levels (Malina, 2015). However, this was sometimes done so without understanding the proper training volumes and what would be safe for their athlete to participate. It had been recommended that youth athletes train no more than their age in hours per week, meaning if they are 15 years old they should only practice/train a maximum of 15 hours per week (Trigsted et al., 2017). Parent’s encouragement for sport participation should be done so in a positive manner so that their child’s enjoyment with the sport increases. Often times parents do not understand their impact, whether it be directly or indirectly. The results of this synthesis reveal that parents have an impact, and understanding at times can be limited in regards to sport specialization. This can be a cause for concern when it comes to the safety of youth athletes.

**Conclusion**

Sport specialization has benefits but also presents a lot of risk factors as well. The research illuminated that sport specialization can lead to enhanced skills earlier on in the sport, but this may come at a cost. This high volume of training could be an issue for an athlete’s health (Padaki et al., 2018). Furthermore, the data reveals that on the way to becoming an elite level athlete they may also struggle socially due to isolation to specific peer groups (Malina, 2015). Amotivation plays a role in the athlete’s ability to enjoy the sport. The results of Sanchez-Miguel et al (2013) concluded that parental support increases motivation in youth athletes. However, when paired with consistent pressure from parents, has the potential to result in lower confidence and enjoyment levels in the athlete. This pressure coming from the parents leads them to overlook the principles of sport.
The results of the articles show that there is lack of understanding among parents. The basis of sports should be designed to be teachable for youth athletes and possess life lessons within them. It is important for the parents to keep sports in perspective when it comes to participation and competition. Sports are supposed to be fun and often times this notion gets lost during competition. The hopes for college scholarships and future success trump skill development and fun participation (Padaki et al. 2018). When in truth, athletes like Usain Bolt and Wilt Chamberlin, were part of the 2% of college level athletes who made it to the professional level. Parents that have youth athletes should be aware of the content in order to fully comprehend what sport specialization is, and to effectively promote safe participation. The parents should be aware of the risks of intense sport competition and encourage proper practices when competing in games, tournaments, trainings and practice. It cannot be concluded that all parents do not understand the risks of sport specialization. The current synthesis is limited to the research that has already been conducted. Future research should examine the extent of parent’s knowledge in the field of sport specialization. The focus should be on whether or not parents understand the variety of risk factors involved. If they are aware of these risks are they being overlooked for potential future success in the sport. These future studies should look at youth sports programs in the US, and globally, to determine if parents understand proper training volumes and safe practices.
Recommendations

The review of all the research conducted, and the journal articles for this synthesis, reveal some recommendations for future research to add data for this topic. First and foremost, future research in regards to parents’ understanding of their impact on sport specialization is encouraged. The current literature available provides good insight on the topic of sport specialization, but more research should be conducted to further solidify parents’ knowledge or lack thereof.

The first recommendation would be to conduct more studies on parents’ understanding of sport specialization. In a study surveying 1,000 parents, Bell et al., (2018) concluded that only 20% of parents understood training volumes while 55% believed sport specialization not to be an issue. Collecting more data from parents would be essential to determine whether or not this lack of understanding is widespread or is not an issue. Parents should be asked if they understand training volumes, understand burnout and overuse, and at what level of specialization their child competes. The current studies establish a basis of the knowledge, limited to select sample populations, and do not represent the entire population of parents.

The second recommendation would be to study how impactful parents are on their child’s participation. Proper motor development is important for young athletes as they progress through sports (Goodway & Robinson, 2015). What are parents doing with their child at ages three to 11 to promote positive growth and development? The parent’s impact on their child’s athletic participation is essential when it comes to motivation levels and continuation in the sport. Research should
be conducted on whether the push for participation is done so in a positive or negative manner and why?

The final recommendation is to examine if educational programs exist for parents before their athletes becomes involved in sports. The understanding on proper motor development, skill introduction, and proper participation levels is not present with parents involved in youth sports (Goodway & Robinson, 2015). Research should be conducted on whether or not parents receive any information on sport specialization in the form of email from coaches, pamphlets, or training prior to introducing their child to a single sport. Furthermore are the parents that receive training causing them to make alternate decisions for their child?

The purpose of this literature review was to determine parents’ understanding of the impact on sport specialization. Delimiting variables were used to do an exhaustive data-based search which yielded 16 articles. These articles were then systematically used to determine the parents’ understanding of the impact of sport specialization. Research revealed that parents hope their child compete at the collegiate and professional levels. This hope for success cause parents to push their children at earlier ages which has an effect on proper motor development. These high intense volumes of training causes issues such as overuse injuries and burnout due to lack of motivation and sense of accomplishment in sport. It had been noted that early introduction into sport specialization did not guarantee elite status at a later point in their athletic career and that sports needs to be kept in perspective when participating.
References


https://doi.org/10.1097/JSM.0000000000000648


https://doi.org/10.1177/2325967117729147


### Appendix A: Article Grid

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<td>Bell, D. R., Post, E. G.,</td>
<td>Parents’ Awareness and Perceptions of Sport Specialization and Injury</td>
<td>Clinical Journal of Sport Medicine: Official Journal of the Canadian</td>
<td>The purpose was to survey parents to determine their knowledge of sport volume recommendations and examine their perceptions towards sport specialization.</td>
<td>Data was measured in via a cross-sectional survey given to parents.</td>
<td>Data was measured in frequencies, proportions, mean values and SD. Chi-square was used to help determine parental influence.</td>
<td>- 80% of parents had no knowledge of sport volume recommendations. - Percentages varied on what was deemed appropriate when it came to participating in different leagues in one sport or multiple sports. - 55% believed sport specialization was a problem.</td>
<td>- Some recommendations are not well known. - Parents are concerned about the risk of injury and consideration sport specialization as a problem. - Proper education for parents is essential.</td>
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<td>Trigsted, S. M., Schaefer,</td>
<td>Prevention Recommendations</td>
<td>Academy of Sport Medicine</td>
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<td>D. A., McGuine, T. A., &amp;</td>
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<td>Bodey, K. J., Judge, L. W.,</td>
<td>Specialization in Youth Sport: What Coaches Should Tell Parents</td>
<td>Strategies</td>
<td>The purpose is to have coaches discuss with parents of youth athletes about sport specialization. To help share insights and help parents feel on a variety of different factors.</td>
<td>Basic information on sport specialization.</td>
<td>Article provided talking points when parents ask for advice.</td>
<td>- Eventually the coach will have to discuss the idea of sport specialization. - This is more to encourage dialogue and help guide the parent to understand specialization. - The decision to specialize is based on a variety of factors, like psychological, physiological, and other social considerations.</td>
<td>- Coaches should provide honest assessment of the athletes strengths and weaknesses on a variety of performance indicators relevant to a given sport in relation to physical and emotional maturity. - Coaches should begin by explaining the difference between sport specialization and diversification. - Coaches should ask parents to recall</td>
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### Patellofemoral Chondral Defect in a Preadolescent Skier: A Case Report in Early Sport Specialization

**International Journal of Sports Physical Therapy**

To describe a patello-femoral articular cartilage defect of the knee in a preadolescent skier due to overuse and repetitive microtrauma as a result of ESS.

**Case Report**

**Radiographs were examined**

Specific sports have been correlated with specific overuse injury patterns - found that there was a significant increase in patellofemoral pain in athletes who specialized in a specific sport earlier compared to those who specialized later - youth injuries to overuse range from 46 to 54% - Allied health professionals should be educated on recurrent knee effusions - Understand how early sport specialization may result in overuse injury - Future studies need to further identify injury risk factors

## Ferguson, B., & Stern, P. J. (2014, October 1)

### A case of early sports specialization in an adolescent athlete

**Journal of the Canadian Chiropractic Association**

To describe a specific case of ESS in a youth provincial baseball pitcher

**Observation, Literature Review**

**Functional Assessment and Observation**

It is important to educate young athletes on how to perform their sport safely and in an effective manner - Important to be educated on how athletes can compete and perform in a safe effective manner - Chiropractors should take a specific approach
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<th>Authors</th>
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<td>Malina, R. M. (2010)</td>
<td>Early Sport Specialization: Roots, Effectiveness, Risks</td>
<td><em>Current Sports Medicine Reports</em> (American College of Sports Medicine)</td>
<td>Overall examination of current data on sport specialization Analyze literature review and data analysis on the topic Young kids consider sport specialization because of: scholarships, trying to get ahead, being labeled &quot;gifted&quot;, professional pursuit Risks: Social isolation, burnout, manipulation, compromised growth, injury Only few athletes make it to the professional levels who specialize Majority drop out along the way Essential to keep sports in perspective and not overdo it at such a young age</td>
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<td>Padaki, A. S., Ahmad, C. S., Hodgins, J. L.</td>
<td>Quantifying Parental Influence on Youth Athlete</td>
<td><em>Orthopaedic Journal of Sports Medicine</em></td>
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When providing advice on proper times to specialize - All parties in an athlete's life should be on the same page when it comes to an athlete's training volumes

Recommended that there should be a gradual progression when it comes to specializing in sport - Sport samplings should be included throughout the participation process

- Limiting experience to a single sport may not be the way to achieve elite status
- Adults are directly and indirectly affected by sport specialization
- Goal should be to allow the athlete to "grow up"
| Kovacevic, D., Lynch, T. S., & Popkin, C. A. (2017) | Specialization: A Survey of Athletes’ Parents | influence place on young athletes to specialize | evaluate parental influence | survey software called Qualtrics Chi-square tests of independence used to assess 5 point Likert scale questions | -49.7% encourage their child to specialize in a single sport -parents influence their child to specialize both directly and indirectly | indirectly to youth specialization -Investment in personal coaches for their child also brings about higher expectations to compete at the collegiate level |
| Padaki, A. S., Ahmad, C. S., Hodgins, J. L., Kovacevic, D., Lynch, T. S., & Popkin, C. A. (2017) | Factors That Drive Youth Specialization | Sports Health: A Multidisciplinary Approach | The purpose of this article is to assess the driving factors behind youth specialization generated by a team of medical professionals | Surveys were administered to patients and athletes (235 participants) in the department's sports medicine clinic. The survey was comprised of two sections comprising of information on base demographics and the other was 15 questions about athlete engagement | The responses were collected using an independent survey software called Qualtrics. Chi-square tests of independence were used to assess the frequency of responses on a 5 point Likert type scale. The findings were deemed significant if P>0.05 | Of 235 out of 254 participants: -31.1% participated in on sport -57.9% played multiple sports -11.0% played a variety of sports equally -70.6% (around 166) desired to play at the college or professional level -84% wished they played more sports -30% had been told by their coaches not to play multiple sports and 22% were told by their parents not to play other sports -Half believed their grades suffered because of athletic participation -60% of youth athletes played their favorite sport | -Athletes could be driven intrinsically and extrinsically it is important that the athlete focuses on their health as well -Recommended to focus on the reason behind specialization rather than just treat the injuries as a result of it |

| The Association of Sport Specialization and Training Volume With Injury History in Youth Athletes | American Journal of Sports Medicine | Youth athletes (2011 participants) were collected from summer tournaments, practices, competitions, and practice. They completed a questionnaire regarding specialization status, sport participation volume, and past injuries. They were then based on a 3 point scale for specialization, put into groups for current volume recommendations, and Odds ratios and 95% CIs were calculated to evaluate specialization and volume of participation with sport related injuries | Data were summarized by means, SDs, frequencies, proportions, medians, interquartile ranges, odds ratios, and 95% CIs. Multivariable logistic regression analyses were utilized to examine associations between categorical variables and the various categories. Models for specialization were additionally controlled for hours per week in organized sports | at least 9 months out of the year -highly specialized athletes were more likely to report a previous injury of any kind or overuse injury compared to low specializing athletes -athletes who participated in a primary sport more than 8 months were more like to report an upper extremity overuse injury -athlete who participated more than 16 hours a week in their primary sport were more likely to report an injury | Recommended that athletes participate in sport less than 8 months out of the year -Compete less than 16 hours a week or less than their actual age -Future recommendations are needed on sport training volumes |

### Sánchez-Miguel, P. A., Leo, F. M., Sánchez-Oliva, D.,

| The Importance of Parents' Behavior in their Children's Enjoyment and | Journal of Human Kinetics | Surveys were distributed to parents to evaluate parental influence | Study was analyzed by a independent survey software | Recommended that parents should monitor how much they pressure their child to |
| Amado, D., & García-Calvo, T. (2013) | Amotivation in Sports | parents behavior with regards to the players motivational orientational, motivational climate, enjoyment and amotivation | called Qualtrics Chi-square tests of independence used to assess 5 point Likert scale questions | specialize in a single sport -parents influence their child to specialize both directly and indirectly | athlete throughout participation |
| Sluder, J. B., Fuller, T. T., Griffin, S. G., & Mccray, Z. M. (2017) | Early vs. Late Specialization in Sport | To provide current research on what is considered proper timing of youth’s participation in sport | Literature Review, Observation | Athletes early specialization in a sport does not guarantee a future in that sport at an elite level | -Children should be encouraged to participate in sport but should be done in a positive manner -Enhancing motor development should come before specialized participation -Important to educate the adults involved in youth sports |
| Stewart, C., & Shroyer, J. (2015) | Sport Specialization: A Coach’s Role in Being Honest with Parents | The purpose of this article is to provide information concerning sport specialization in youth sport for coaches to share with parents | Literature Review of the current topic of issue | Various gathering procedures of articles and compilation of data into one research article | -Social isolation due to restricted exposure to a variety of peers -Overdependence on adults in highly regulated sport activities, which in turn can cause a lose sense of control -Athletes cannot keep up with the demands of the sport which can cause burnout | -Listen to doctor recommendations on participations -Mandatory training for all coaches involved -Important to have proper supervision of coaches to monitor behavior and their focus on sportsmanship -Recommended to eliminate the “more is better” idea when it comes to training |