

Motivation and Behaviors Related to Sport Specialization in Collegiate Baseball Players

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Context: Early sport specialization is a growing concern among youth sport athletes, particularly in baseball. Motivation to participate in sports is an important factor in determining which sports youth athletes participate in and why.

Objective: To qualitatively investigate the youth sport participation behaviors and motivations of collegiate baseball players.

Design: Qualitative study.

Setting: Online teleconference.

Patients or Other Participants: We conducted 25 semistructured interviews with collegiate baseball athletes who were classified as high-level (n = 8), moderate-level (n = 9), or low-level (n = 8) specialists before college.

Data Collection and Analysis: Participants completed individual semistructured interviews to allow us to develop an understanding of their youth and high school sports experiences and associated motivations to engage in those experiences. A framework analysis approach was used to analyze the transcript data and identify themes among the 3 specialization groups.

Results: From our interview analysis, 6 overall themes emerged: (1) motivation, (2) stress, (3) quitting, (4) barriers, (5) facilitators of success, and (6) future directions. Moderate- and high-level specialists described greater levels of passion, participating in deliberate practice, greater levels of performance-related stress, and more desire to quit sports than low-level specialists. None of the groups cited parents as an overbearing external motivator to participate in sport at an early age.

Conclusions: Participants who were classified as low-, moderate-, or high-level specialists noted different experiences related to their motivation, stress level, desire to quit, barriers to participating in baseball, facilitators of success, and their overall future career goals after completing baseball. This information may be useful for parents, coaches, and health care professionals to better communicate the benefits and risks associated with sport specialization to youth athletes. Future research is needed to determine if differences in motivation levels exist in younger populations.

Key Words: stress, athletic success

Key Points

- Athletes at all levels of specialization described playing baseball at an early age for enjoyment and fun; however, moderate- and high-level specialists articulated greater passion and focused attention to improve their sport performance. To reduce the risk of physical and psychological consequences related to youth sport, these groups should be educated regarding rest and recovery recommendations.
- Parents were not identified as an overbearing external motivator to engage in sports. Participants depicted parents as encouraging figures who introduced them to sports and then expressed an increasingly self-determined desire to be involved in sports as they got older.
- Compared with low-level specialists, moderate- and high-level participants consistently reported having greater performance-related stress levels and more desire to quit sports due to a lack of enjoyment or poor coach interactions. This may indicate the need to monitor physical and psychological stress levels in these groups to reduce the risk of staleness and burnout.

Baseball is considered America's pastime, with more than 15 million annual participants over the age of 6 years.¹ Nearly 14% of children ages 6 to 12 regularly participate in baseball.² In the last few decades, concern has grown among medical professionals regarding the trend toward early sport specialization in baseball among other youth sports.^{3,4} *Sport specialization* is described as intentional

and focused participation in a single sport for a majority of the year that restricts participation in other sports or activities.⁵ Sport specialization occurs for many reasons, including enhancing skill development and leading to a greater possibility of playing the sport at the next competitive level.^{6,7}

Many athletes specialize in a specific sport because they believe that specialization provides the amount of deliberate

practice needed to participate at higher levels of competition in the sport.⁸ Among youth athletes between the ages of 12 and 18, 93% indicated that they thought sport specialization improved their sport ability *quite a bit* (24.2%) or *a great deal* (68.2%).⁸ Similarly, nearly 80% of high school baseball players' parents believed specialization increased their child's chances of improving at baseball.⁹ Further, approximately 36% thought their child would be *somewhat likely* or *very likely* to receive a college baseball scholarship; however, although approximately 500 000 US high school students participate in baseball each year, only 7.5% of these athletes eventually participate at some level of National Collegiate Athletic Association baseball competition.^{9,10}

Athletes, parents, and coaches play roles in motivating an athlete to participate in sports. To measure motivation in athletes, several tools exist that primarily use survey research methods to gather data.¹¹⁻¹⁴ The use of quantitative methods alone may limit our understanding of the repercussions of sport specialization; as such, qualitative research methods may provide additional insight into athlete motivation through learning more about lived experiences related to sport specialization during an athlete's formative years. Currently, limited evidence in the qualitative realm pertains to the effects of early sport specialization on athlete motivation. Therefore, the purpose of our study was to use a phenomenological approach to qualitatively investigate youth sport participation behaviors and motivations of collegiate baseball players.

METHODS

Design

We used a phenomenological qualitative approach and semistructured interviews to examine experiences related to motivation among a subset of collegiate baseball players. Approval from the University of Nebraska Medical Center Institutional Review Board was granted before data collection.

Participants

Participants were recruited to complete an anonymous online questionnaire. Data collection occurred from mid-October to mid-November 2020. The research team emailed the certified athletic trainers at 25 colleges who were asked to forward an email invitation to the collegiate baseball players at their institution inviting them to participate in the survey. A follow-up email was sent if little to no institutional participation was noted after 2 weeks. Study inclusion required individuals to be between 18 and 30 years old and currently on a roster associated with a collegiate baseball program. The inclusion criteria were intentionally vague to allow us to assess athletes at a variety of specialization levels. Recruits were excluded if they participated in multiple school-sponsored sports as athletes for their institutions. These athletes represent a small percentage of collegiate baseball players; therefore, we excluded them so that the sample better represented the population of interest. The Figure shows the number of collegiate baseball players who participated in each component of the study.

Instrumentation and Procedures

Recruitment Questionnaire and Procedures. We created a custom questionnaire and administered it in an

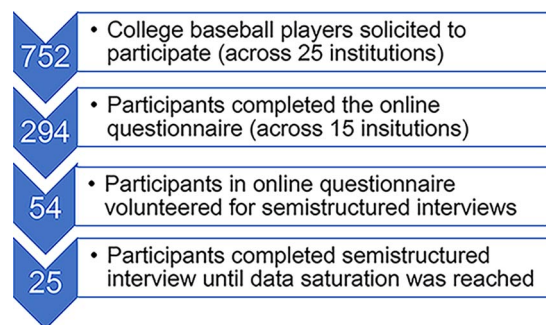


Figure. Participants throughout the study.

online format using Qualtrics. The questionnaire asked for participant demographics (age, mass, height, position, and institution) and baseball and other sports participation history for different periods (ie, elementary school through college). The level of specialization was determined using the Jayanthi et al specialization scale based on answers provided to specific questions in the survey: “Did you only ever play 1 sport?,” “Have you quit other sports to focus on 1 sport?,” and “Do you train more than 8 months out of the year in 1 sport?”¹⁵ We also included a question suggested by Miller et al, “Do you consider your primary sport more important than other sports?” as this improved the accuracy of categorizing athletes into specialization levels.¹⁶ A categorical classification system was used to assess the sport specialization questions (*yes* = 1, *no* = 0), with a score of 3 = high specialization, 2 = moderate specialization, and 0 or 1 = low specialization.¹⁵ When respondents answered *yes* to participating in only 1 sport, they were not asked about quitting other sports in order to focus on 1 sport. They answered these questions for 4 time periods, and we calculated specialization scores for (1) elementary school (kindergarten to 5th grade), (2) middle or junior high school (6th to 8th grade), (3) early high school (9th to 10th grade), and (4) late high school (11th to 12th grade). For the purposes of this study, participants were categorized based on the highest level of specialization reported during any of these time periods.

At the end of the survey, participants were asked to indicate their interest in engaging in an interview to learn more about what influenced them to take part in baseball during their formative years. Respondents who volunteered for interviews provided their email address so they could be contacted for scheduling purposes; records of these addresses were destroyed after data collection. A maximum variation sampling method was used to identify participants for the research study so that the primary investigator (S.J.W.) could gather information from individuals categorized as high, moderate, or low specialization to ensure a full representation of data from all 3 levels. This allowed inclusion of an equal number of participants from each specialization category and linking of the data from the survey to the interviews to create a more robust data analysis.

Qualitative Interview Procedures. Qualitative data were collected using a semistructured interview guide with each participant via computer-based teleconferencing software (version 5.4.1; Zoom.us). A phenomenological approach was used to learn more about participant experiences and what influenced each athlete's decision to take part in sports via the Self-Determination Theory as a framework.^{17,18} The interview

guide was developed by the primary investigator and consisted of open-ended questions to gain an overall understanding of participants' perceptions of what influenced them to engage in sport specialization behaviors (Appendix). The interview guide was evaluated for content validity by a panel of experts before the interviews began. The content experts had expertise in sport specialization (E.P., 7 years of research experience, 45 published manuscripts; D.R.B., 13 years of research experience, 53 published manuscripts) and survey and qualitative research design (M.M., 28 years of research experience, 62 published manuscripts; L.K., 25 years of research experience, 76 published manuscripts). The interview guide was piloted before data collection with a group of current collegiate baseball players who met the inclusion and none of the exclusion criteria to ensure that the interview questions were gathering appropriate data needed for analysis of the research question. The questions were updated to make them broader and more open-ended in nature so as to encourage more dialogue from the participants. Individuals who completed the trial interview were not eligible for the actual study. Before the interview, participants provided informed consent and agreed to be audio recorded for data-analysis purposes. All interviews were conducted by the primary investigator between October and December 2020 and ranged from 30 to 90 minutes in length.

Data Analysis

The interview data audio recordings were transcribed verbatim using Zoom.us software (otter.ai). The primary investigator reviewed the transcriptions for accuracy and completeness. Pseudonyms were assigned during transcription to maintain participants' anonymity. Interviews continued until data saturation occurred, when participants repeated concepts discussed by earlier participants.

Member checks were used to ensure the accuracy of the transcriptions. The transcript was emailed to each individual, who was asked to review and provide any corrections or feedback within 14 days. If no corrections were returned within the 14-day period, we assumed that none were needed.

Our framework analysis method required a staged approach to analyze the data.¹⁹ The first stage, familiarization, required us to familiarize ourselves with the data to better understand the tone and information being described by study participants.¹⁹ The next stage identified a thematic framework through initial coding of the data to identify the overall themes. A multiple-analyst triangulation was used to review the transcripts and characterize emerging themes to ensure thorough examination and appropriate interpretation of the information. Three members of the research team and an external reviewer with expertise in qualitative methods each performed a preliminary exploratory analysis, making initial notes about the information provided. The next stage involved a more in-depth coding of the data and connecting the codes to different themes.¹⁹ In a subsequent reading, we assigned labels to the data and collated similar labels to generate themes. Finally, we met to compare themes and labels from the data. A chart was created using the themes from the thematic framework stage, which allowed the data to be converted into an easily digestible format. The primary investigator (S.J.W.) collated themes from the other investigators and organized the information to allow the data to be communicated effectively in order

to address the research question. This approach has been used by researchers in the health science and nursing literature to analyze concepts and experiences related to depression.¹⁹ Using this approach allowed us to minimize interpretation bias while ensuring that participant experiences were shared in a meaningful way, which is important for phenomenological research.¹⁷

RESULTS

A total of 54 participants provided their contact information to volunteer for an interview, and 25 participants completed the interviews before data saturation occurred (specialization: low = 8, moderate = 9, high = 8). Participant demographics for the interviews are supplied in Table 1. From our interview analysis, 6 overall themes emerged among the groups: (1) motivation, (2) stress, (3) quitting, (4) barriers to training, (5) facilitators of success, and (6) future directions.

Motivation

The motivation theme represented the primary focus of the interviews to learn more about differences among groups of specialization. Participants described motivation in various ways, which could be classified into either intrinsic or extrinsic motivation subthemes.

Intrinsic Motivation. All 3 specialization groups demonstrated strong evidence of intrinsic motivation, primarily centered on enjoying baseball and the socialization aspect of involvement in team sports. The low specialization group discussed involvement in a variety of sports mainly to have fun.

It was a lot of fun. It was so much fun. I really enjoyed every second of the football season. I enjoyed every second of baseball. –Billy (low)

The moderate and high specialization groups described engaging in baseball specifically to improve at the sport or achieve success in baseball compared with other sports they were playing (Table 2).

I think I realized I could go to college for baseball at [a] decently young age, and I needed to work on it and practice a lot. . .play the best teams, competition, stuff like that. So, then I think my dad also realized that, too. So, when he saw that, he started putting me in that stuff. –Logan (moderate)

Be the best person I can be and make me the best high school player but not only that . . . is to play college baseball that's solely what I wanted to do. –Thomas (high)

Extrinsic Motivation. All 3 specialization groups also demonstrated extrinsic motivation, primarily focused on wanting to progress to the next level of competition and parental support to take part in sports. Almost all the participants indicated their parents were their initial influence to become active in a sport early in their childhood. However, the moderate and high specialization groups spoke more to focusing their sport involvement at an early age to reach the next level of competition (Table 2).

Table 1. Participant Demographics

| Pseudonym | Age, y | Highest Level of Specialization Before High School | Competition Level | Current Position |
|-----------|--------|--|-------------------|------------------|
| Aaron | 20 | Low | NAIA | Pitcher |
| Adam | 22 | High | NAIA | Pitcher |
| Alex | 22 | Moderate | NCAA DIII | Center field |
| Andrew | 21 | Moderate | NAIA | Pitcher |
| Ben | 19 | Moderate | NAIA | Pitcher |
| Billy | 21 | Low | NCAA DI | Pitcher |
| Charlie | 20 | Low | NCAA DIII | Pitcher |
| Daniel | 19 | Low | NCAA DI | Pitcher |
| David | 18 | Low | NAIA | Center field |
| Eddie | 21 | Moderate | NCAA DII | Pitcher |
| Jack | 21 | Low | NCAA DIII | Left field |
| James | 22 | Moderate | NAIA | Center field |
| Jason | 24 | High | NCAA DII | 2nd base |
| Joseph | 19 | Low | NCAA DI | Pitcher |
| Josh | 18 | Moderate | NAIA | Catcher |
| Lewis | 21 | Moderate | NCAA DIII | Pitcher |
| Logan | 23 | Moderate | NCAA DII | Left field |
| Luke | 21 | High | NCAA DIII | Pitcher |
| Matt | 20 | High | NAIA | Pitcher |
| Nathan | 20 | High | NCAA DII | Pitcher |
| Oliver | 22 | High | NCAA DIII | Right field |
| Ricky | 20 | Low | NAIA | 1st base |
| Robert | 19 | High | NAIA | 1st base |
| Thomas | 18 | High | NCAA DIII | Pitcher |
| Zach | 21 | Moderate | NAIA | Catcher |

Abbreviations: D, Division; NAIA, National Association of Intercollegiate Athletes; NCAA, National Collegiate Athletic Association.

I mean, my parents were, you know, all about it. I guess they were supportive, the best you can get. . . [what] kind of kept me around was my coaches. . . all of my coaches, they just wanted me coming back. They were a big part of, you know, wanting to be there and to keep going, I guess. –Ricky (low)

My folks just kind of said, do whatever makes you happy. And I never really was like upset playing these things. . . I like doing them so they just said, alright, you keep playing and, they would always come support me, and they were always willing to help me if I asked for question or anything, but it’s just kind of like, you gotta do what makes you happy. That’s kind of what they’ve always been big preachers on is if you’re not doing [what] makes you happy, there’s no reason to. –Eddie (moderate)

It’s so hard to explain. . . baseball for me, I almost do it out of like obligation. . . and then like when I go to practice, I’m like, I feel like guilted into getting better and not in a, like a bad sense. . . but just like. . . Oh, I want to get better at baseball, because I feel like I have to, but I still want to, but I feel like I have to. . . –Jason (high)

Stress

Stress is a part of sports participation. However, the sources of stress among the specialization groups were different. The low specialization group did not cite specific stresses related to participation in sports but rather mainly discussed a stress-free environment. The moderate specialization group had a mixture of responses, with some saying they experienced quite a bit of stress, primarily around

performance, whereas others mentioned low levels of stress. Several high-specialization respondents described stressful situations regarding performance and a strong feeling of personal identity tied to the sport (Table 3).

I don’t think so. I had a lot of fun during that time. It was, it was pretty stress free. –Billy (low)

I can tell you that baseball has been quite stressful in my life, yeah, because I love it so much, but baseball’s different. I really love the game and I love playing it. And so, whenever you have like bad outings as a pitcher or you are having a slump as a batter. . . and so I’ve had moments in my life where I’ve just played absolutely terrible. And I can’t figure out why. –Nathan (high)

Quitting

The quitting theme also demonstrated distinct differences among specialization groups. For example, the low specialization group did not discuss seriously considering quitting baseball at any point in their career. However, the moderate and high specialization groups thought about quitting baseball more frequently for various reasons. Many were focused on performance due to injury, poor coach interactions, or diminishing enjoyment in the sport, which primarily involved quitting other secondary sports besides baseball (Table 3).

No, not quit. You know there’s times when you have bad outings. You say, this is the stupidest game. I don’t know why I play it, that that type of stuff, but never seriously considered quitting the game. –Charlie (low)

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Table 2. Supporting Evidence for Intrinsic and Extrinsic Motivation

| Pseudonym | Level of Specialization | Quote |
|----------------------|-------------------------|--|
| Intrinsic motivation | | |
| Billy | Low | It was a lot of fun. It was so much fun. I really enjoyed every second of the football season. I enjoyed every second of baseball. |
| Jack | Low | You know, because it was fun. Yeah, just having fun with friends would probably be the biggest one. |
| Logan | Moderate | I think I realized I could go to college for baseball at [a] decently young age, and I needed to work on it and practice a lot. . .play the best teams, competition, stuff like that. Then I think my dad also realized that, too. When he saw that, he started putting me in that stuff. |
| Zach | Moderate | I decided that my best way to get to college baseball is to learn my position on the baseball field to a T and get everything into focus. |
| Nathan | High | I felt like it was just something that came easy to me. . .fielding a ground ball or swing of a bat, it was just easy and fluent and that's why, I don't know, I loved it so much. And I just had a ball in my hand all the time and it just happened to be a baseball. It just came to me, I guess. |
| Thomas | High | Be the best person I can be and make the best high school player but not only that. . .is to play college baseball, that's solely what I wanted to do. |
| Extrinsic motivation | | |
| Ricky | Low | My parents were all about it. I guess they were supportive, the best you can get. . .but what kept me around was my coaches. . .all of my coaches, they just wanted me coming back. They were a big part of wanting to be there and to keep going, I guess. |
| David | Low | A lot of my friends started choosing their 1 sport and. . .I really didn't want to go that path and my parents urged me not to go that path. Stay with all 3. And so that's what I did. And it was kind of hard. There was a lot of sports at the time and everything. So, it's kind of hard going to all those practices 24/7 and always practicing on weekends and everything, but I ended up staying in all 3. And I'm glad I did. |
| Lewis | Moderate | But in order to make the high school teams out there, you have to be playing club. . .competitive club ball for several years to really have that foundation or by the time you try to go through those trials your freshman year, you're going to be years behind. . .And my parents recognized that. So, I started playing club sports and everything. Which, you know, for Southern Utah, it's like Southern California. So, you'd play 11 months out of the year. . .tournaments. You take maybe a month and a half off around Christmas time, but I think that's when the competitive nature and like the love for the game really started to come to fruition. |
| Eddie | Moderate | My folks just said, do whatever makes you happy. And I never really was like upset playing these things. . .I like doing them so they just said, alright, you keep playing. They would always come support me and they were always willing to help me if I asked a question or anything, but it's just kind of like, you gotta do what makes you happy. That's what they've always been big preachers on is if you're not doing makes you happy, there's no reason to. |
| Jason | High | It's so hard to explain, because the only way I explained it is like the intrinsic motivation of it. . .baseball for me, I almost do it out of obligation. . .and then when I go to practice, I feel like guilty into getting better and not in a, like a bad sense. . .but just like. . .Oh, I want to get better at baseball, because I feel like I have to, but I still want to, but I feel like I have to. . . |
| Nathan | High | I would say that the biggest influence was just my dad, my mom. My mom loves watching me play sports and still to this day, she does, but she doesn't have the same commitment level as my dad does. . .he, my dad, promised the day that I was born that he would come to every single sporting event that he could. |

He sat me on the bench for a whole game. And when I asked him about it after, he just said, yeah, you're not going to play this year if you're picking baseball over basketball. Because your teammates need you. You're not showing a commitment for the team, stuff like that. So, I said, well, baseball's my number 1 sport and if I'm just going to come here to risk injury and not play in the basketball games, I'm just not going to play. –Logan (moderate)

Yeah, I'll be honest. . .It wasn't becoming fun anymore and then I found it again. I found my love for it again

and I haven't looked back ever since. The reason why I wanted to stop was because I was kind of tired and [the] schedule and stuff like that. And I just wanted to just breathe and just take a breath and come back in. And then I realized that that just wasn't good for me. –Robert (high)

Barriers to Training

Differences in the barriers to training theme among specialization groups varied slightly from those described in the previous themes. The low and moderate specialization

Table 3. Supporting Evidence for Stress, Quitting, and Barriers to Training Continued on Next page

| Pseudonym | Level of Specialization | Quote |
|-----------------------------|-------------------------|---|
| Stress | | |
| Billy | Low | I don't think so. Um, I mean, I had a lot of fun during that time. It was, it was pretty stress free. |
| Aaron | Low | It wasn't a bad stress, like, you know, couldn't sleep at night or anything. It was more of a stress that just pushed me to make changes so that I wouldn't make those same mistakes. |
| Ben | Moderate | I'm super hard on myself. I've kind of been told by lots of people that I can't do that. But I want to be...I'm a perfectionist. I got to be perfect and you can't be perfect in baseball, so it's a lose-lose situation, but I think that's what's kind of driven me each year to get better is just, hey, that even...even when I was good. |
| Andrew | Moderate | If you know it was a rough day or something like that...We talk and I remember there's a couple [of] serious talks about, "is this something that you want to do? Because if it is, then we'll keep on pursuing it. But if it isn't, we're not going to waste our money on travel fees paying to be a part of the team, hotels, gas, food on your way out"...So, we did have those serious talks, I believe, my sophomore, junior year. |
| Nathan | High | I can tell you that baseball has been quite stressful in my life. Yeah, because I love it so much, but baseball's different, I really love the game and I love playing it. And so whenever you have bad outings as a pitcher or you are having a slump as a batter. I always say baseball is the most humbling game because you can do really well 1 day, and then the next day, just do absolutely terrible. And it really just humbles you as a player thinking your way up here. And then the next day you're not...and so I've had moments in my life where I've just played absolutely terrible. And I can't figure out why. |
| Oliver | High | More baseball than anything. Just because I'm very hard on myself. And I want to do the best I can. And even if it were something that most people would consider good, I still felt that could be room for improvement. |
| Quitting | | |
| David | Low | I really don't think so. I think one of the reasons why I did baseball in high school, was I didn't feel like my career in baseball is over. And that's one of the reasons kind of why I went into baseball kind of in college because like when I feel like sports...It kind of just kept me in line and just had a big impact in life. |
| Charlie | Low | No, not quit. You know there's times when you have bad outings. You say, "this is the stupidest game. I don't know why I play it"...that that type of stuff but never seriously considered quitting the game. |
| Logan | Moderate | He sat me on the bench for a whole game. And when I asked him about it after he just said, "Yeah, you're not going to play this year if you're picking baseball over basketball. Because your teammates need you. You're not showing a commitment for the team," stuff like that. So, I said, "Well, baseball's my number 1 sport and if I'm just going to come here to risk injury and not play in the basketball games, I'm just not going to play." So, it was upsetting, but it let me focus more on baseball. And at the end of the day, if the coach wasn't going to play me because I leave 1 day a week, then there's no reason to practice 6 other days out of the week. |
| Lewis | Moderate | I think when I was younger, elementary to middle school phase. I think that's when I had several things going on in my life that I wanted to devote time to. At that point, it was kind of, you know, have to pick 1, maybe 2 max[imum] to put that time and effort into get[ting] real good at those things. At that point [in] time, that's why I chose music and baseball to really be, the 2 main focuses for me growing up. |
| Luke | High | Once my sophomore year, yes. After my coach said I wasn't going to play varsity...I was kind of thinking like, I knew I loved the game, but I was like, alright, this coach does not think I'm cut out for it. So, I'm like, what's kind of the point? There was 1 night I got extremely close. I was thinking about just telling the coach right then and there, like turn in my jersey, all of that. My parents were very helpful with that they're just like, no. Give it another day...give it another practice, but I was very close. |
| Robert | High | Yeah, I'll be honest. And then, I came back to it...was during that time was when I started losing passion for the game. It wasn't becoming fun anymore and then I found it again. You know, I found my love for it again and I haven't looked back, ever since. So the reason why I wanted to stop was because I was kind of tired and schedule and stuff like that. And I just want to just breathe and just take a breath and come back in. And then, I realized that that just wasn't good for me. Because if I feel like...So I would say, I feel like if I would have left, I probably would have never come back. And I didn't want that "what if," you know, like, you know, like that. What about it just kept playing or what if I didn't stop playing that year. |
| Barriers to training | | |
| Aaron | Low | I was 5'7". I was skin and bones, and I tried to put on weight. It wasn't easy for me. I mean I succeeded a little bit. I feel like that was a part of the hardest barrier to overcome was my size. |
| Ricky | Low | So, when I was younger, I told you I was a catcher. And then I think it was my sophomore year of high school, maybe junior year...I found out that my head of my femur, the ball and socket in my hip, the ball is not a ball and so it's kind of rubbing up against my labrum...So those micro tears and whatnot, so catching wasn't a good idea for me, I guess, because that kind of made it worse. So barrier, was that, just switching positions. Yeah, I had to switch positions because the hips were not good. |

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Table 3. Continued From Previous Page

| Pseudonym | Level of Specialization | Quote |
|-----------|-------------------------|--|
| James | Moderate | Obviously the Midwest winter made it difficult sometimes. Especially when you have like a couple feet of snow on the ground. So, it tends to be dependent. Yeah, it's definitely just finding like facilities to practice baseball made it really difficult to play long toss or anything like that because it didn't have like a big building for that. So, you have to get creative with what you did. |
| Josh | Moderate | A kind of, the only barrier I've ever had was the arm injury that was kind of like my biggest barrier getting over that, that mental hump of saying, hey, you can come back. I mean, you can come back throwing harder and stuff like that. |
| Luke | High | Yeah, we'd have this, you go to our indoor facility. We'd start lifting weights. We'd go hit in cages, throw bullpens...so and in the winter, it was all training and lifting, stuff like that... very blessed with opportunities to always keep training and keep working somehow, whether it be through like a team or just a facility around my house. |
| Nathan | High | Growing up, I don't think there was any barriers, other than age really...you couldn't do it. Sometimes you know, you would go to high school games and you'd want to be doing the stuff that they're doing or, you know, hit the ball as far as they do, but you can't because you're not as old as them. And the only thing that has been a barrier in my entire life now is probably COVID because I haven't been able to... there's I've been quarantined just this year like 3 or 4 times just because of other people...haven't been able to go to practice, my whole entire season last year got shut down, wasn't able to do anything. |

groups routinely recognized weather, athlete size, and injuries as barriers to training or playing baseball as much as they wanted. However, the high specialization group often stated that they did not notice many barriers to training or playing baseball. Many participants in the high specialization group indicated they had access to facilities and other opportunities as much as they wanted (Table 3).

I was, I was 5'7". I was skin and bones, and I tried to put on weight. It wasn't easy for me. I mean I succeeded a little bit, but I feel like that was a part of the hardest barrier to overcome was my size. —Aaron (low)

Obviously the Midwest winter made it difficult sometimes. Especially when you have like a couple feet of snow on the ground. So, it tends to be dependent...[on] finding facilities to practice baseball [and] really difficult to play long toss or anything like that because it didn't have like a big building for that. So, you have to get creative with what you did. —James (moderate)

Yeah, you go to our indoor facility. We'd start lifting weights. We'd go hit in cages, throw bullpens...so and in the winter, it was all, it was all training and lifting...very blessed with opportunities to always keep training and keep working somehow, whether it be through like a team or just a facility around my house. —Luke (high)

Facilitators of Success

This theme was unique in that the subthemes were almost identical across specialization groups. Nonetheless, each group had a slightly different way of describing what helped lead them to be successful and play collegiate baseball. Social support, personal attitude, and opportunities provided by others were the subthemes for facilitating success (Table 4).

Social Support. Participants explained social support in a variety of ways. Many commented on positive parental and coach support throughout their athletic career and were quick to recognize these individuals. Others characterized spending time together through sports as part of their family life. Several respondents readily acknowledged their

peers and continuing to play because of the social interaction with their friends.

Just opportunities to improve that I had. I never really had any setbacks or roadblocks to continue my improvement. I had mentors that helped me to really get stronger and develop my pitches. That was always something that helped me succeed, too. —Joseph (low)

Having someone to look up to like my brother. I guarantee you that having him was a subconscious influence; it definitely had some sort of influence on competitiveness, hey, I want to be better than you. I want to be better than you ever were. And I don't know if I'm at that point. So, I gotta keep getting better. —Ben (moderate)

I think mainly my mom and my dad. They always supported me with my decisions, and we always threw every idea on the table and kind of went through it and... imagined certain outcomes. And hey, if we do this, this is probably what's going to happen. —Adam (high)

Personal Attitude. This subtheme reflected differences among the specialization groups. The low specialization group commonly discussed an increased work ethic and how they took personal responsibility for their successes and failures related to sport. The moderate specialization participants portrayed an increased competitive spirit compared with their teammates and increased confidence in their skills and abilities. Finally, the high specialization group noted high levels of self-confidence with an increased commitment to the sport and the associated schedule.

I would definitely say those long nights practicing sports on weekends and weekdays. I honestly, I think that kind of starting a kid kind of young with, like, hand-eye coordination. —David (low)

You're not always the most talented player on the field, but you can always control how hard you work. So, I guess [I] really just took that to heart and really try to use...the entire offseason during the season, everything. —James (moderate)

Table 4. Supporting Evidence for Facilitators of Success Continued on Next page

| Pseudonym | Level of Specialization | Quote |
|--------------------------|-------------------------|--|
| Social support | | |
| Charlie | Low | It was my dad wanting to be able to work with something. . . because he was pretty good at baseball growing up and he knew a lot. . . and he was one of the driving forces that. . . he was able to help me with the stuff I was trying to develop. You know, I think a lot of problems that people could run into is they have all this information, but they have no way to go and execute it. My dad was the one, you know, we converted our shop into a batting cage and into a homemade bullpen. |
| Joseph | Low | Just. . . like opportunities to improve that I had. I never really had any setbacks or roadblocks to continue in my improvement. I had mentors too that helped me to really get stronger and develop my pitches. So that was always something that helped me succeed, too. |
| Lewis | Moderate | I can't attribute it to [a] singular 1 thing. I definitely think it's a combination. I think it's a combination of the opportunities I was given grow[ing] up, the support system that I had on, whether teammates, my older sister or, you know, other family members. But, it's always been the drive that I want to improve myself, especially as I got older. |
| Ben | Moderate | Having someone to look up to like my brother, like that. I guarantee you that had even if it was a subconscious influence, it definitely had some sort of influence of competitiveness, hey, I want to be better than you. I want to be better than you ever were. And I don't know if I'm at that point. So, I gotta keep getting better. |
| Adam | High | I think mainly my mom and my dad, you know, they always supported me with my decisions, and we always threw every idea on the table and kind of went through it and. . . and imagined certain outcomes. And hey, if we do this, this is probably what's going to happen. |
| Thomas | High | I think surrounding myself with people that knew I could succeed. . . getting that confidence boost from them, like my mom and my grandpa, my pitching coach and all of them. But surrounding myself with people that I knew, I knew, I could succeed in this sport. And not only that, it's the people that didn't think I could succeed. Like I was told that you're not going to be a pitcher, you're going to be a middle infielder. And I said, I mean, I didn't say no. But I knew in back of my mind "you can't tell me that". . . like I'm going to be the best pitcher I can be. |
| Personal attitude | | |
| Billy | Low | Just being able to recognize that it's no one else's job but mine to better myself. It's not my coaches' job to make me better. It's not my roommates' job to make me better. . . it's my job to make myself better. . . I take responsibility for myself. I'm taking responsibility for my actions and at the end of the day, it's me putting this product out here. . . it's me putting myself out there. It's not someone else. . . this is just a game and I get to play the game. . . and I get to play it at the highest level possible. . . or I'm going to try to play it at the highest level possible. . . |
| David | Low | I would definitely say those long nights practicing sports on weekends and weekdays. I honestly, I think that kind of starting a kid kind of young with, like, hand-eye coordination, everything is. I think that's big and everything. |
| James | Moderate | You're not always the most talented player on the field, but you can always control how hard you work. So, I guess [I] really just took that to heart and really try to use that the entire off-season during the season everything. |
| Alex | Moderate | I would say that there's that competitive edge that not every player necessarily has. . . kind of the, one of those things where [you] just have that competitive attitude to want to do better, to want to win, you know, in high school. It's hard to find that sometimes. Sometimes people are just there to have fun and they don't really care about the outcome. . . for me, it was like, I want to win. I want to dominate. I want to do this. And now finally [to] be able to come to college and everyone's like that. It's a really great experience. |
| Oliver | High | I would say it had to do a lot with my drive. . . like I knew it was something I wanted to do and I knew that I was good enough to go through with it. And so, I wanted my main motivation. . . was finding the right school that would allow me to play more than anything. Because I didn't want to be someone who rode the bench for 2 or 3 years. I wanted to go to school and prove myself right away. And have the opportunity to play, knowing that I more than likely wouldn't play after college. . . And definitely my support system with family. . . guys on the team always supported me, always wanted me to do and be the best I could. |
| Matt | High | Definitely collegiate baseball in the summer. I learned a lot. . . really good competitiveness, which made me better in high school. . . then high school junior and senior year, I was dominant in high school again. . . I dominated in collegiate ball and then I got scholarship offers to play baseball. . . to play baseball in college. . . and I just went to. . . was going to go to the JuCo [junior college] and went there in January. |
| Opportunities | | |
| Joseph | Low | Just like opportunities to improve that I had. . . I had mentors that helped me to really get stronger and develop my pitches. So that was always something that helped me succeed, too. |

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Table 4. Continued From Previous Page

| Pseudonym | Level of Specialization | Quote |
|-----------|-------------------------|---|
| Jack | Low | I would say a lot of it was with the club baseball team because that's where I am that I did a showcase through them. That's where I ended up meeting the college I go to now, so and then they had a big role in it, and also getting exposure through them. |
| Ben | Moderate | I had some pretty good coaches, all the way through, you know, I can remember each one of them...And what they kind of did for me and different aspects of the game. You know, many of, many of the coaches kind of helped me mentally with baseball and pitching. It's such a difficult mental sport and, you know, even back to like when I was 12...my coach of that, like, Little League All-Star Team...You know, like mound visits weren't like hey, you know, how you feeling stuff. I got it was kind of like a conversation of, hey, this is, you know, ignore that, ignore this, focus on the catcher and throwing the ball there...just going all the way through the system of coaches, it kind of just got more intense at each level of knowledge. You know, getting up in the late high school years with the pitching coaches, we had where, I mean, they were good. They knew a lot about baseball. They were great dudes and really helped me develop both like pitchwise and just mentally about how to win games. |
| Logan | Moderate | I think my parents had a big factor and how they pushed me to work hard. They gave me everything I could ever need, like opportunities to travel around the country to play, get exposure play[ing] on the best team. |
| Luke | High | And then also, when I left to go play travel ball. The first coach I met was amazing. He believed in me from the get-go. It was kind of crazy really...And he would help me talk to colleges. He's the one that really kind of made me fall in love with baseball again. Because I was playing it. I was playing it to play my sophomore year...didn't see a future in it because all my coaches for telling me no...but he believed in me and kind of instilled that drive again. |
| Robert | High | I believe that like behind every good player is a good coach...and behind every good coach is a good parent...And I feel like for me, I've always had good guidance as a kid and still now. |

I would say it had to do a lot with my drive... I knew it was something I wanted to do, and I knew that I was good enough to go through with it. And so, ...my main motivation was finding the right school that would allow me to play more than anything. Because I didn't want to be someone who rode the bench for 2 or 3 years. –Oliver (high)

Opportunities. The participants spent time reflecting on opportunities and other individuals who helped them attain the level of collegiate baseball. Many of these individuals were coaches who recognized their potential and provided opportunities to showcase talent. However, we did not find any differences across specialization groups.

I would say a lot of it was with the club baseball team because that's, that was where I am, that I did a showcase through them. That's where I ended up meeting the college I go to now, so and then they had a big role in it and also getting exposure through them. –Jack (low)

I think my parents had a big factor and how they pushed me to work hard. They gave me everything I could ever need, like opportunities to travel around the country to play [and] get exposure play[ing] on the best team. –Logan (moderate)

I believe that behind every good player is a good coach...and behind every good coach is a good parent...And I feel like for me, I've always had good guidance as a kid and ...still now. –Robert (high)

complete their collegiate baseball career (Table 5). The low specialization group consistently focused more on a career outside of sports after graduation. Several planned to pursue a career in health care or education. Those in the moderate specialization group anticipated a combination of trying to move on to play professional baseball, seeking a career that still involved being around sports, or striving for a career in a field that did not involve sports. The high specialization group had the largest number of participants who stated they wanted to pursue a career in professional baseball or a career that kept them involved in sport.

My major is education. And then my minor is exercise science...either [I] want to be a physical therapist or a teacher. Right now, I'm leaning towards being a teacher in biology. –David (low)

I mean, I['d] love to play professional baseball, but sometimes I think it's an unrealistic goal, but it's a goal I'd like to shoot for. But growing up and saying, I want to go get an internship at Wilson to kind of learn their business side of it and stuff like that. So, I kind of want to just like stay in the sports realm, kind of baseball realm. –Josh (moderate)

I want to play professional baseball. Pretty much. I was in JuCO [junior college] for a little bit of baseball. I can. I did really well in there before COVID took it out and I came here, I'm just taking my steps up. –Matt (high)

Future Directions After Collegiate Baseball

Differences were present among specialization groups in what the respondents believed their future held after they

DISCUSSION

To our knowledge, this is the first study to evaluate sport specialization behaviors and athlete motivation using a

Table 5. Supporting Evidence for Future Careers After College Baseball

| Pseudonym | Level of Specialization | Quote |
|-----------|-------------------------|--|
| Billy | Low | I want to impact peoples' lives in health care. I know growing up, I've had various injuries and so I've had to see a sports medicine physician, quite often. And so that person made a huge impact in my life. . .goal in my life is just kind of be the best version of myself and impact people in a positive way. |
| David | Low | My major is education. And then my minor is exercise science. . .either want to be a physical therapist or a teacher. Right now, I'm leaning towards being a teacher in biology. |
| Josh | Moderate | I love to play professional baseball, but sometimes I think it's an unrealistic goal, but it's a goal I'd like to shoot for. But growing up and saying, I want to go get an internship at Wilson to kind of learn their business side of it and stuff like that. So, I kind of want to, just like, stay in the sports realm, kind of baseball realm. |
| Eddie | Moderate | I'm going to get my degree in middle school education, with an emphasis in social studies. I'm going to start taking master's classes this spring, get a master's in applied health and sports science. So, to maybe keep options on [the] table to coach college or working [in the] athletic department or something of that capacity because I kind of liked the way college athletics rolls. |
| Matt | High | I want to play professional baseball. Pretty much. I was in JuCO [junior college] for a little bit of baseball, I can. I did really well in there before COVID took it out and I came here, I'm just taking my steps up. |
| Thomas | High | After college, I mean, in my head, I really see me coaching at Silver Creek, but I also have that back mindset of, you know, I'm playing pro ball, too. I mean, that's where I want to see myself and I'm going to keep pulling on that. |

qualitative phenomenological approach. We grouped individuals based on their highest reported level of specialization before high school to learn more about how their youth sport experiences may have influenced their motivations and behaviors related to playing baseball and other sports. During the qualitative interviews, participants in each specialization group discussed several areas that corresponded with intrinsic motivation, such as playing because a sport was fun, playing because they wanted to, and playing because they had a passion for the sport. The low specialization group described their experiences as more relaxed and simply playing sports because they were fun and it was fun to be around their friends. The moderate and high specialization groups also seemed to play sports because they were fun, but they displayed a higher level of passion for specific sports and engaging in sports with a more intentional focus of improving. These differences may explain why participants in the moderate and high specialization groups focused on baseball earlier than those in the low specialization group. Athletic trainers working with youth and adolescent athletes, especially at moderate to high specialization levels, should emphasize appropriate rest and recovery recommendations to athletes, parents, and coaches.⁶ As internal motivation and passion for a sport increase in these groups, sport participation may also increase. Having at least 2 days off per week and being active in a sport for ≤ 8 months per year can help mitigate the chronic injury risk seen in athletes who specialize early.⁶

Many respondents cited external motivators, such as parents, other family members, and coaches, who affected their desire to play baseball. Almost all individuals credited their parents as influential in starting them in sports at a young age. However, as the participants aged, they commented that playing sports was primarily their decision but their parents were supportive. Few individuals mentioned feeling pressured by their parents to be involved in a sport. Especially in the moderate and high

specialization groups, this self-determined approach seemed to begin at an earlier age than in the low specialization group. Our findings are similar to those of other researchers who observed that 88.9% of youth athletes reported that their parents *never* or *rarely* told them that they could not play other sports besides their primary sport.²⁰ In another study, the same authors discovered that nearly 55% of parents reported influencing their child to focus on 1 sport.²¹ However, as athletes grew older and competed in high school, investigators showed that 53.7% of parents believed their high school baseball player would be *somewhat likely* or *very likely* to receive a college baseball scholarship.⁹ This study also revealed that 70% of parents thought that focusing on 1 sport helped increase their child's chances of making a college team either *quite a bit* or *a great deal*.⁹ Although parents may be substantial influencers when young children start in sports, most of our participants gave an increasingly self-determined reason for continuing in sports as they grew older. To assist stakeholders working with youth athletes, athletic trainers may provide additional education regarding the components of the Long-Term Athletic Development model, which outlines goals related to participation in sports based on age for both male and female athletes.²² Incorporating the Long-Term Athletic Development model can help ensure that athletes are working toward age-appropriate sport benchmarks, which may help delay sport specialization behaviors until later in life.

The themes of stress and quitting also illuminated differences among specialization groups. The low specialization group routinely described stress-free sport environments other than typical performance-related stress. They also rarely expressed the wish to quit baseball. From an intrinsic motivation standpoint, this group played sports because sports were fun and they wanted to be around friends. Even though the moderate and high specialization groups shared some of these characteristics, they consistently reported having higher performance-related stress levels and wanting to quit sports

due to lack of enjoyment or poor coach interactions. Our qualitative data coincide with other evidence suggesting that athletes who specialize earlier have higher rates of burnout and other psychological concerns than athletes who specialize later.^{23,24} Stakeholders should monitor athlete physical and mental stress levels, particularly in moderate and highly specialized youth athletes. Simple observation or using a variety of patient-reported outcome measures can help identify athletes under increased stress.²⁵ Significant prolonged stress levels can have physiological and psychological effects on athletes.^{24,26}

In contrast with the low specialization group, more moderate and high specialization participants suggested that their goal was to continue playing professional baseball after college or find a career closely tied with sports. Almost all in the low specialization group described their future careers occurring outside of baseball or sports. It is possible that the moderate- and high-level specialization groups dedicated so much time and effort to sports that it was difficult for them to view their future without involvement in sports, despite their greater stress and desire to quit sports earlier in their careers.

Limitations

Our study was not without limitations. Survivorship bias was present, and examining collegiate athletes to learn about behaviors and motivations during their youth sports career may not be the most accurate way to determine if differences exist. Repeating this study with a younger cohort of participants may yield different motivation levels and behaviors among specialization groups. As indicated by many of our respondents, weather or the environment was a barrier to playing as much baseball as they wanted. This could have been related to the limited geographic area from which we recruited participants. Including individuals from schools outside of the Central Plains region may yield different results due to the varied climates in other parts of the country. Recruiting from other geographic areas will also include those with varied socioeconomic backgrounds, which may have been limited in the current study.

CONCLUSIONS

Collegiate baseball players identified 6 themes related to sport specialization behaviors: motivation, stress, quitting, barriers to training, facilitators of success, and future careers. The low, moderate, and high specialization groups noted different experiences for each theme. Future research is needed to determine if differences in motivation levels exist in younger populations.

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Appendix. Semistructured Interview Questions^a

Semistructured Interview Questions

1. Can you start by telling me a little bit about yourself?
2. Can you tell me about your sport experiences before you started elementary school?
 - (a) Can you describe your motivation for playing these sports?
 - (b) Which people had an influence on your decision to play these sports?
 - i. Can you describe how they influenced your decision?
3. Can you tell me about your sport experiences during elementary school (grades kindergarten to 5)?
 - (a) Can you describe your motivation for playing these sports?
 - (b) Which people had an influence on your decision to play these sports?
 - i. Can you describe how they influenced your decision?
 - (c) If playing multiple sports, which sport was your focus in elementary school?
 - i. Why was that sport more important to you?
4. Can you tell me about your sport experiences during middle school (grades 6 to 8)?
 - (a) Can you describe your motivation for playing these sports?
 - (b) Which people had an influence on your decision to play these sports?
 - i. Can you describe how they influenced your decision?
 - (c) If playing multiple sports, which sport was your focus in middle school?
 - i. Why was that sport more important to you?
5. Can you tell me about your sport experiences during early high school (grades 9–10)?
 - (a) Can you describe your motivation for playing these sports?
 - (b) Which people had an influence on your decision to play these sports?
 - i. Can you describe how they influenced your decision?
 - (c) If playing multiple sports, which sport was your focus in early high school?
 - i. Why was that sport more important to you?
6. Can you tell me about your sport experiences during late high school (grades 11–12)?
 - (a) Can you describe your motivation for playing these sports?
 - (b) Which people had an influence on your decision to play these sports?
 - i. Can you describe how they influenced your decision?
 - (c) If playing multiple sports, which sport was your focus in late high school?
 - i. Why was that sport more important to you?
7. Did you ever feel stressed about your performance playing baseball (or other sports)?
 - (a) If so, can you describe what caused that stress?
8. Can you describe any barriers that prevented you from training or playing baseball as much as you wanted to?
9. Did you ever take a break from playing baseball?
 - (a) If so, why did you take a break?
10. Did you ever think about quitting baseball?
 - (a) If yes, why?
11. Can you describe what you believe led to your success in being able to play college baseball?
12. Why did you decide to play baseball in college?
13. Can you tell me what your future looks like after college?

^a Items are reproduced in their original format.