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The relationship between sport commitment with off-season training time and previous in-season Playing Time in College-Aged Soccer Players 2020.

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The Relationship between Sport Commitment with Off-Season Training Time and Previous In-Season Playing Time in College-Aged Soccer Players

by

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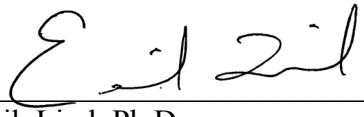
June 5, 2020	
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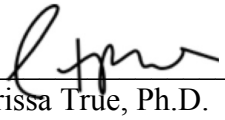
June 5, 2020	
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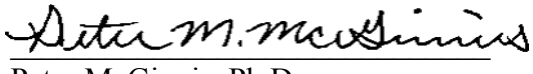
June 5, 2020	
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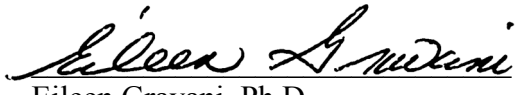
June 5, 2020	
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ABSTRACT

Sport commitment is defined as "…the desire and resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993, p. 6). Since the first definition, the concept has been further refined to reflect a more multidimensional paradigm. Overall, sport commitment is thought to be comprised of the dimensions of enthusiastic commitment and constrained commitment (Scanlan, Chow, Sousa, Scanlan, & Knifsend, 2016). Those constructs can be broken down further to 12 subconstructs that are represented in the Sport Commitment – 2 (SC; Scanlan, Chow, Sousa, Scanlan, & Knifsend, 2016), in order to evaluate the source and level of an individual's commitment to their sport. In any competition, performance is vital, and it is how we judge athletic performance. In a sport such as soccer, with non-stop play and a game based on flow, it lacks quantifiable performance measures. It is also a sport with few substitutions which is why playing time was the main measurable used in this study. Coaches choose who plays the majority of minutes based on practices, and few changes are made because consistency is the goal. The goal of this study is to see if one's level of commitment in a team sport relates to on-field performance. After recording total minutes played, games played in, and average minutes per game of the 2018 season, qualified participants were asked to self-record the minutes of exercise they completed a week for eight consecutive weeks and sent the sport commitment questionnaire. Significant results were found relating performance and sport commitment, performance and constrained sport commitment, and games played in and self-reported exercise. Considering limitations and the small sample size (N =11), it is encouraging to confirm the relationship between past performance and off-season training, and performance and sport commitment; however,

the relationship between performance and constrained commitment plus the lack of relationship between performance and enthusiastic commitment is directly controversial with previous literature. Sport commitment is used to predict long-term future performances, yet the collegiate demographic is completely overlooked by sports psychologists. There are endless variables in a student athlete's time involved with a team, and recent past performances have yet to be included in the sport commitment model. College students have the option to be involved with a team up to five years, and level of commitment throughout that time can be constantly changing based on infinite variables. Therefore, more research needs to be conducted regarding all athletes and their commitment to their sport among this demographic.

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Finally, to my colleagues and friends along the way, Cortland Rec Sports, Red Jug, even Alfred State, you've been a major part of this experience and must be acknowledged. Thank you for the positive work environments and good times thus far as we all make our way through this crazy thing we call life!

Cheers!!

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

TABLES

CHAPTER 1

Introduction

While success in sports can be defined in various ways, underlying successful high athletic achievement consists of more stable elements. Successful athletes tend to demonstrate positive adaptations to structured training programs, benefit from advanced movement analysis, rely on nutritional best practices, incorporate rest and recovery into their overall training program, and dedicate time to general and sport-specific training during out of season periods. Yet, these factors are only as effective as the athlete is willing to personally invest and integrate each one into his or her overall sport program. In other words, the degree to which an athlete commits him or herself to their respective sport has important implications relative to the success experienced. Thus, there is an obvious inherent element that serves as an important starting point when trying to understand why athletes succeed at high levels.

Sport commitment is defined as "…the desire and resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993, p. 6). Since this original definition, the concept has been further refined to reflect a more multidimensional construct. In particular, overall sport commitment is thought to be comprised of the dimensions of enthusiastic commitment and constrained commitment (Scanlan, Chow, Sousa, Scanlan, & Knifsend, 2016). Enthusiastic commitment advances the original definition by Scanlan and colleagues (1993) by adding a temporal aspect (i.e. over time). Conversely, constrained commitment reflects "…perceptions of obligation to persist in a sport over time" (Scanlan et al., 2016, p. 234). Collectively, understanding the

overall concept and associated dimension of sport commitment may provide athlete and coach alike with critical information that may explain an athlete's approach to his or her training and sport.

Statement of the Problem

In collegiate level competition, the amount of commitment an individual puts forth in a team sport and how it relates to on-the-field performance has yet to be fully investigated. Athletes in a team setting often strive for the same goal, specifically to perform to the necessary level in order to defeat their competition. However, each teammate has their own individual level of commitment to perform within that team sport setting.

As it pertains to the sport of soccer, with performance measured by tracking in-season playing time and playing time decided by the coaching staffs, coaches may be able to affect players' sport commitment based on the in-season playing time they assign. Players' level of sport commitment may in turn affect their future performances including the amount of playing time they receive, however previous research does not relate these variables.

Purpose

The purpose of this study is to examine the relationship of sport commitment with off season training measures and in-season playing time in a sample of Division III soccer players.

Hypotheses

Hypothesis 1: There will be a significant relationship between off-season training time and in-season playing time from the previous season.

Hypothesis 2: Number of minutes per week accumulated by athletes during individual and team conditioning exercises will be significantly associated with overall level of sport commitment.

Hypothesis 3: There will not be a significant difference in overall Sport Commitment score from pre- to post-experiment administration.

Delimitations

This study was delimited by the following:

1. All participants were undergraduate students enrolled at SUNY Cortland.
2. All participants and coaching staff were on the active roster of SUNY Cortland's men's and women's soccer teams for the entire 2018-2019 academic year.
3. All participants were encouraged to capitalize on conditioning opportunities during the summer 2019 off-season.
4. In-season playing times were retrieved from the 2018 competitive season statistics.
5. Measures of the summer 2019 off-season conditioning included self-reported minutes spent per week performing individual conditioning exercises.
6. Sport commitment was measured using the Sport Commitment Questionnaire - 2

Limitations

This study was limited by the following:

1. Rest time during workouts could not be consistently measured.
2. Playing time was recorded and reported by the SUNY-Cortland's soccer teams coaching staff.

Assumptions

The following assumptions were made about this study:

1. Participants completed the Sport Commitment Questionnaire - 2 truthfully.
2. Participants recorded their weekly minutes of exercise time truthfully.

Significance of the Study

The goal of this study was to gain a better understanding of the inter-relationships among an athlete's previous performance, their level of commitment to their sport, and how much time they work on improving themselves while continuing to be involved in a collegiate sport.

Definition of Terms

Sport Commitment	A psychological construct representing the desire and resolve to continue sport participation (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993).

Self-Determination Theory	Theory addressing personality development, self-regulation, universal psychological needs, life goals and aspirations, energy and vitality, non-conscious processes, the relations of culture to motivation, and the impact of social environments on motivation, affect, behavior, and well-being (Deci & Ryan, 2008).
Enthusiastic Commitment	The psychological construct representing the desire and resolve to persist in a sport over time (Scanlan, Chow, Sousa, Scanlan, & Knifsend, 2016).
Constrained Commitment	The psychological construct representing perceptions of obligation to persist in a sport over time (Scanlan et al., 2016)

CHAPTER 2

Review of Literature

Sport commitment is a relatively new topic in the domain of sport psychology. The Sport Commitment Model (SCM) was first developed and used in order to study the different factors that influence commitment to sport and exercise behavior (Scanlan et al., 1993). This model looks at different types of motivations that could enhance or compromise one's persistence of exercise within a sports setting. As the first of its kind, there were some clear limitations in the model, particularly with the motivational aspect. Thus, a hierarchical motivation model was created to better understand the depths of motivation and the influence it has on commitment in sport (Zaharidis, Tsorbatzoudis, & Alexandris, 2006). Studying commitment and motivation in sport is really searching for the answer as to why one participates and performs, in maintaining physical and/or sportive activities (Garcia-Mas et al., 2010). By understanding the level of commitment an individual possesses, it may be possible to manipulate the level of commitment with the purpose of seeking said individual's goals.

Sport Commitment

A sufficient amount of the general literature on commitment had existed prior to the SCM, however no one had attempted to apply it to the realm of sports. It is important to study commitment in sport as it can help illuminate motivations that lay beneath one's level of persistence (Scanlan et al., 1993). Attempting to better understand an individual's motivations for participating in sports has been a part of sport psychology from the beginning (Gould & Carson, 2008). The self-determination theory (SDT) addresses many

components of psychology and is very applicable within the field of sport psychology due to the persistence necessary in sports. A large aspect of the SDT is the breakdown of motivation in order to see what causes one to be more or less self-determined. Autonomous motivation is essential in determining the commitment of an individual as well as the overall success one is capable of achieving (Deci & Ryan, 2008). The idea of commitment, which is most glaringly held within the field of psychological theory and research, is one where commitment reflects aspects supporting persistence in a course of action, or even during adverse times (Becker, 1960). The term, "commitment", is often used in many different contexts such as a general psychological state, with specific intentions, or with a specific behavior; however when underlying motivations are being discussed, commitment should be viewed as a general psychological state (Raedeke, 2016). Explaining commitment can be confusing when looking at precursors and the aftermath of what that specific commitment is related to. Literature has gone both ways proving that the antecedents and consequences can define a commitment however, once again when dealing with motivations, those should be predetermined and they will define the level of commitment (Scanlan et al., 1993). Lastly, in order to measure commitment, one must be able to understand the nature of that commitment. For example, does an individual commit to something because they "want to", or do they feel they "have to"? More often than not the level of commitment is a combination of both. Wanting to carry on, reflects the individual's feelings of self-satisfaction and self-identity with said activity, while having to carry on is related with the individual's social pressures and constraints (Wilson et al., 2004).

With the foundation of commitment in place, one can begin to look at what some of the general determinants are with any given commitment. There are three variables that help determine the level of commitment in a given situation with the first being the level of attractiveness. In terms of being satisfied, liking or loving a certain aspect can have a large effect on the level of commitment. The second variable takes into account all alternatives in contrast with our first variable. This is primarily referring to the everyday choices that are made that affect a certain commitment; when a choice is to be made towards said commitment, there are often tempting alternatives that essentially pull one away from the commitment at hand. The last variable, being similar to the second, along the lines of restricting one's actions, however instead of "alternatives", Rusbult deems these "investments" to be major determinants in commitment as well (1980). The major difference is with the investments there is rarely a choice as the situation provided has created a restraint on the decision process. This final variable takes into consideration predetermined social, financial, emotional, and psychological factors that may take priority to a new or current commitment and could ultimately be cause for termination of that commitment (Rusbult, 1980; Scanlan et al., 1993). With these three variables held at large, the concept of sport commitment now had a basis to create its first model.

The model would break sport commitment into five new constructs that embodied the original three more specifically to a sport. The five new constructs included Sport Enjoyment, reflecting the attractiveness of a sport; Involvement Alternatives; and Personal Investments, Social Constraints, and Involvement Opportunities were created to represent the restraining forces on an individual. Each construct being equally important to the level of commitment possessed by an individual. Enjoyment of a sport is necessary

if one is to stay involved over time; it has been proven that both young and elite athletes are more likely to have a greater desire and willingness to exert more effort if they like the activity or view it as fun. Therefore, it is fair to say that a higher level of sport enjoyment is correlated to a higher level of sport commitment. The involvement alternatives construct is fundamentally described above with the three basic constructs and can be applied the same way in this five-construct model. It should be noted that through an individual's life this variable can be quite dynamic; for example, children often participate in multiple sports and activities with relative ease, however as one grows, priorities change, and decisions are made that disallow one from being involved in everything desired. The different involvement alternatives can have a significant impact on commitment in sport. The final three constructs of the model help clarify the initial "restraint" construct as there are many variables within the one stated above. Personal investments refer to an individual's personal resources they have put into a sport. These should be viewed as intrinsic values that cannot be recovered if participation ended; therefore, the more personal investments put into a sport, the greater the level of commitment. The social constraints of participation within a sport can weigh heavily on an individual and in different ways. Social pressures or simply to perform at a certain level can have lasting effects on how committed an individual is to said sport. The final construct, involvement opportunities, sets this model apart from past frameworks because it takes into consideration the potential lasting benefits of sport participation as an individual determinant of sport commitment. Furthermore, this construct is centered on anticipation and continued involvement, considering being able to participate with friends

and striving for mastery. These five individual constructs come together to create the SCM (Rusbult, 1980; Scanlan et al., 1993).

This initial model was tested on Little League baseball players, by using a qualitative questionnaire that used a five-point Likert scale. Each construct had its own section, along with a general sport commitment section at the start of the questionnaire. The section pertaining to involvement alternatives was ultimately removed due to the fact that a significant amount of the participants had difficulty answering those questions. One other question among the personal investments construct inquired about money, and since money was not directly applicable to the population, it was rightfully discounted. As the population consisted of boys and girls with ages ranging from 9 to 14 years old, results were analyzed by age group, and it was found that the significant predictors within the model were sport enjoyment and personal investment (Scanlan et al., 1993). As this model gets applied to other sports groups it is expected that results will vary, however the predictive role of sport enjoyment is imperative in understanding commitment to a sport.

As this model aged, researchers continued to assess it by refining questionnaires and establishing new psychometric properties of sport commitment. Modifications were made to the assessment tool and two new constructs were added; Social Support and Desire to Excel. Social support was added as a new predictor of commitment based on previous quantitative and qualitative data, while the desire to excel is seen as a form of enthusiastic commitment that can further explain why athletes persist in sports (Scanlan et al., 2016). Enthusiastic commitment and constrained commitment can be simplified as a task an individual “wants” to do versus a task an individual feels they “have” to do, and

these constructs were added to the questionnaire to test sport commitment. The reformed commitment questionnaire was given to hundreds of athletes that participated in various sports (soccer, volleyball, baseball, softball, and cross-country), and results showed that enthusiastic commitment was associated with sport enjoyment, valuable opportunities, other priorities, and desire to excel-mastery achievement. Sport enjoyment and valuable opportunities were the strongest sources of enthusiastic commitment, implying that the more the athlete enjoyed his/her sport the more they would miss out on opportunities if they were to stop participating, leading to a greater desire and determination to continue with said sport. On the other hand, the questionnaire revealed constrained commitment to be strongly associated with sport enjoyment, valuable opportunities, other priorities, social constraints, and personal investments. In this case, constrained commitment is negatively correlated with sport enjoyment reaffirming that the more an individual enjoyed their sport, the less they felt constrained to persist. In contrast, social constraints was found to be unrelated to enthusiastic commitment, however it is strongly correlated with constrained commitment as the social pressures and expectations also caused athletes to persist in their sport. This second sport commitment questionnaire successfully assesses the original constructs of the SCM while taking into account more recent research on the types of commitment and motivation in athletes (Scanlan et al., 2016).

Although sport enjoyment and involvement opportunities have been proven to be significant predictors of sport commitment, the specificity of those constructs specifically involvement opportunities is lacking (Stuart, Hopkins, Cook, & Cairns, 2005). While it is easy enough to understand if an athlete enjoys his/her sport, the involvement opportunities construct is a bit more general with its questions, focusing on what they

may “miss” if participation was to cease (Carpenter & Scanlan, 2016; Scanlan et al., 2016). As the level of competition increases playing time becomes more valuable to individuals as well as teams and coaches, yet the literature overlooks playing time when speaking of involvement opportunities. Involvement opportunities is a positive predictor in an athlete’s continued involvement in a sport, and the amount of time a player spends in competition can help or hurt said player’s overall level of commitment (Carpenter & Scanlan, 2016; Schmidt & Stein, 2016).

When choosing who plays and who sits, coaches look to identify good and poor performance characteristics among the individuals during their training (DiSalvo et al., 2007). The coaches’ evaluation of a player is the most prominent predictor of playing time, however performances pertaining to strength and conditioning in training is the next largest predictor accounting up to 81% when evaluations are excluded (Hoffman, Tenenbaum, Maresh, & Kraemer, 1996). Playing time will obviously vary with different requirements of each sport, however the physiological state of an individual athletes should be kept in mind when considering just how much that athlete can perform at the necessary level in order to be successful, and this speaks to their training (Burke & Hawley, 1997; Hoffman et al., 1996). This would suggest that those athletes who work harder or perform better off the field of competition in training, are the ones, or at least should be the ones who receive more playing time during a competition. Although this is quite dependent on the coach, the training that is done out of competition is often still considered in the coaches’ evaluation of each player which is the largest determinant of playing time (Gilbert & Trudel, 2016).

With the value of playing time in mind, players can have expectations put on them by external and internal sources to perform on and off the field. This pressure to perform can often become a hindrance on the athlete, where they feel the need to work to improve and this can lead to burnout (Burke & Hawley, 1997; Gilbert & Trudel, 2016). When athletes suffer from burnout they become demotivated and end up devaluing the sport to go along with physical debilitations such as chronic fatigue, lack of sleep and depression (Lemyre, Roberts, & Stray-Gundersen, 2007). Overtraining and burnout can have major impacts on an individual's relationship and commitment to a sport or team, and is usually imposed from an outside source such as a coach or family member. As it has been proven that off-the-field exercise can determine playing time for athletes to a certain extent, the reverse cannot be said, as there is limited research linking playing time to the amount of extra work an athlete puts in with the goal of receiving more playing time. The extra work athletes put in when speaks to their autonomy and commitment to their sport.

Summary of Research

Commitment in sport is an important variable when individuals or teams have the goal of progressing and improving, and it has everything to do with the motivation of the athlete (Scanlan et al., 1993). On the topic of motivation, it can be broken down into several constructs in order to understand exactly how and why each individual participates and then relate it to their level of commitment to that sport. The constructs, sport enjoyment, valuable opportunities, other priorities, personal investments, social constraints, social support, and desire to excel can then be categorized into two separate

types of commitment, enthusiastic commitment and constrained commitment. Enthusiastic commitment involves tasks an individual wants to be committed to, whereas constrained commitment involves tasks an individual feels they have to be committed to (Scanlan et al., 2016).

As the level of competition increases the level of commitment required does as well in order to improve or meet expectations. For team field sports specifically, when coaches go about choosing who plays and who doesn't, the evaluation of players' work away from formal competition is the primary determinant, suggesting the more work a player puts in, the more playing time they will receive (Burke & Hawley, 1997; Petit, Levy, Lejoyeux, Reynaud, & Karila, 2012). Coaches must be aware of overtraining and burnout as they push their players to perform during training as those will influence an athletes overall motivation and commitment to their sport (Lemyre et al., 2007). Individuals who train more than others autonomously potentially show increased levels of motivation and therefor commitment to their sport.

CHAPTER 3

Methods

The aim of the proposed idea was to see if there was any relationship between an individual's commitment to the sport of soccer and their performance. The following sections (participants, measures, design and procedures, and statistical analysis) describe how the study was conducted.

Participants

With the aim of the study in mind, the State University of New York (SUNY) Cortland men's and women's soccer teams were selected to partake in this study. There were 26 players eligible to participate in the study, all of whom are between the ages of 18 and 22 years. All eligible participants were on the active roster during the fall 2018 season and had the intention of staying on the team for the next competitive season (fall 2019). Any players that missed the majority of the season for any reason or did not receive playing time in at least 12 out of the 23 total games were not included in the study. The coaching staffs kept records of each players' playing time in each game of the season. This study was voluntary for each of the eligible participants; 11 out of the 26, seven males and four females, willingly chose to participate by completely filling out the questionnaire.

Instrumentation

Informed Consent

Prior to recruitment and data collection, the study was reviewed and approved by the SUNY Cortland Institutional Review Board. Their approval letter is shown in Appendix A. Each participant signed an informed consent (Appendix B) prior to the start of the study. Eligible participants were notified that the study was entirely voluntary, and they could withdraw or choose not to partake in the study at any point. The informed consent also contained information regarding the purpose of the study, the expected length of the study, risks and benefits, IRB approval information, and contact information of the researcher.

Sport Commitment Questionnaire-2

Sport commitment was measured using the Sport Commitment Questionnaire-2 (SC; Scanlan, Chow, Sousa, Scanlan, & Knifsend, 2016). The Sport Commitment Questionnaire-2 is a 58-item questionnaire that provides an overall score as well as scores for the dimensions of Enthusiastic Commitment and Constrained Commitment. Each item is scored on a 5-point Likert scale. Scanlan and colleagues (2016) provide evidence of the instrument's validity and reliability.

Self-Reported Exercise

Self-reported exercise data was determined by the total number of minutes an individual athlete reported to have completed each week over the summer (June 2 – July

27, 2019). Participant's eight weekly entries of self-reported exercise was then averaged providing a SRE score.

Total Playing Time (Performance Measure)

Playing time was determined from the 2018 competitive season using total playing minutes for all participants as recorded by the coaching staff.

Total Games (Performance Measure)

The number of games each participant officially took part in as recorded by the coaching staff.

Average Minutes per Game (Performance Measure)

Total playing time over the number of games each participant played in.

Enthusiastic Commitment Score

The first of the two primary constructs that make up this questionnaire, half (29) of the questions create each participants' enthusiastic commitment score.

Constrained Commitment Score

The second of the two main constructs that make up this questionnaire, half (29) of the questions create each participants' constrained commitment score.

Each participant's scores can be broken down into sub-constructs based on 4-6 specific questions throughout the questionnaire.

Enthusiastic Commitment Score Sub-Constructs

Questions that fell under the Enthusiastic Commitment umbrella came from one of the following constructs: Sport Enjoyment, Valuable Opportunities, Other Priorities, Personal Investment – Loss, Personal Investment – Quantity, or Enthusiastic Commitment.

Constrained Commitment Score Sub-Constructs

Questions that fell under the Constrained Commitment umbrella came from one of the following constructs: Social Constraints, Social Support – Emotional, Social Support – Informational, Desire to Excel – Mastery, Desire to Excel – Social, and Constrained Commitment.

Procedures

Once the candidate pool was confirmed and we had all players' total minutes played, total games, and minutes played per game, each player received a standardized email (Appendix C), with the questionnaire attached as an Excel file. The questionnaire included a tab for participants to fill in their self-reported weekly minutes of exercise over the past eight weeks during summer. Once the participant chose to complete the questionnaire, they saved the file and returned it via email. Due to the small number of participants, the data from the seven males and four females were combined into one group.

Data Analyses

Data were analyzed using SPSS statistical software (version 25). Descriptive statistics (mean ± standard deviation) were calculated for average self-reported exercise per week, total minutes played, total games, and average minutes per game played. Descriptive statistics (mean ± standard deviation) were also calculated for overall sport commitment score, enthusiastic commitment score, constrained commitment score, and all 12 sub-construct scores for all participants. A series of Pearson's bivariate correlations were conducted to determine if relationships existed among performance measures (total minutes played, total games, and average minutes per game), self-reported exercise, and commitment measures (total sport commitment score, enthusiastic commitment, constrained commitment, and the 12 sub-constructs) for all participants.

CHAPTER 4

Results

Descriptive Statistics

Completed surveys were returned from 11 participants and the performance records were provided by SUNY Cortland's men's and women's soccer coaching staffs. Descriptive statistics for age, years in the program, primary position (Defense = 1, Midfield = 2, Forward = 3), total minutes played, total games, average minutes per game, and average minutes per week of self-reported exercise can be viewed in Table 1.

Table 1
Descriptive statistics of the demographics and on-field performance of collegiate soccer players (N = 11)

Variable	Mean	Standard Deviation	Range	Minimum	Maximum
Age	20.64	1.21	3	19	22
Years in program	2.95	0.91	2.5	2	4.5
Primary position (code)	1.82	0.75	2	1	3
Total minutes played	1299.8	666.9	1847	145	1992
Total games	18.4	4.5	12	11	23
Avg. minute/game	65.8	26.7	17	13	30
Avg. minutes/week of SR exercise	372.4	252.9	802	98	900

Performance and Sport Commitment Questionnaire Score

Despite the low sample size, several significant correlations existed, relating "performance" to sport commitment and its constructs. Pearson's bivariate correlations

for on-field performance, self-reported exercise over the summer, and sport commitment score are presented in Table 2.

Table 2
Pearson's Bivariate Correlations for Self-Reported Exercise, On-Field Performance, and Sport Commitment Score in Collegiate Soccer Players (N =11)

	1	2	3	4
1. Average Self-Reported Exercise				
2. Total Minutes	0.573			
3. Total Games	0.635*	.951**		
4. Average Min/Game	0.446	.965**	.858**	
5. Sport Commitment Score	0.484	.620*	.502	.652*

Notes:
* =statistically significant at the $p < .05$ level
* = statistically significant at the $p < .01$ level

A Pearson's correlation coefficient was calculated to assess the relationship between participants' total minutes played and sport commitment score. A moderate correlation was found, $r\ (11) = .620$, $p < .05$, indicating a significant relationship between the two variables. A Pearson's correlation coefficient was calculated to assess the relationship between participants' average minutes per game and sport commitment score. A moderate correlation was found, $r\ (11) = .652$, $p < .05$, indicating a significant relationship between the two variables.

Performance and Enthusiastic Commitment Score

A Pearson's correlation coefficient was calculated to assess the relationship between participants' performance and enthusiastic commitment score. A non-significant,

weak correlation was found, r (11) = .414, $p > .05$. Performance was not related to enthusiastic commitment score.

Performance and Constrained Commitment Score

A Pearson's correlation coefficient was calculated to assess the relationship between participants' total minutes played and constrained commitment score. A moderate, significant correlation was found, r (11) = .615, $p < .05$, indicating a relationship between the two variables. A Pearson's correlation coefficient was calculated to assess the relationship between participants' average minutes per game and constrained commitment score. A moderate, significant correlation was found, r (11) = .652, $p < .05$, indicating a relationship between the two variables. Pearson's bivariate correlations for self-reported exercise over the summer, total minutes played, total games played and constrained commitment score are presented in Table 3.

Table 3
Pearson's Bivariate Correlations for Self-Reported Exercise, On-Field Performance, and Constrained Commitment Score in Collegiate Soccer Players (N =11)

	1	2	3	4
1. Average Self-Reported Exercise				
2. Total Minutes	.573			
3. Total Games	.635*	.951**		
4. Average Min/Game	.446	.965**	.858**	
5. Constrained Commitment Score	.447	.615*	.461	.652*

Notes:
* =statistically significant at the $p < .05$ level
* = statistically significant at the $p < .01$ level

Performance and Individual Subconstructs of Sport Commitment

A Pearson's correlation coefficient was calculated to assess the relationship between participants' performance, self-reported exercise and each sport commitment subconstruct (sport enjoyment, valuable opportunities, other priorities, personal investment – loss, personal investment – quantity, enthusiastic commitment, social constraints, social support – emotional, social support – informational, desire to excel – mastery, desire to excel – social, and constrained commitment). No significant correlations were found. Results for each subconstruct can be viewed in appendix D/E.

Performance and Self-Reported Exercise

In order to measure "performance" as accurately as possible, three measures were used for each participant; total minutes played, total games, and average minutes played per game. A Pearson's correlation coefficient was calculated to assess the relationship between participants' self-reported exercise and total games played. A moderate, significant correlation was found, $r\,(11) = .635$, $p < .05$, indicating a relationship between the two variables. A Pearson's correlation coefficient was calculated to assess the relationship between participants' total minutes played and self-reported exercise. A weak, non-significant correlation was found, $r\,(11) = .573$, $p > .05$. A Pearson's correlation coefficient was calculated to assess the relationship between participants' average minutes per game and self-reported exercise. A weak, non-significant correlation was found, $r\,(11) = .446$, $p > .05$. To clarify, self-reported exercise was only related to the total number of games played (see Table 2); no other significant relationships existed with participants' self-reported exercise.

CHAPTER 5

Discussion

This study looked at whether levels of commitment relates to collegiate soccer athletes' time spent exercising over the summer away from the team, as well as on-field performance from the previous season. Sport commitment combined with aspects of the self-determination theory can help increase overall performance in collegiate athletes as it relates to athletic competition.

With all competitive athletics, coaches and researchers are constantly trying to improve performance no matter the sport. That said, depending on the sport, the actuality of measuring performance can become increasingly difficult under the scope of team sports as opposed to an individual competing in a single event or multiple events. Considering a team sport such as soccer, there are countless variables that make up an individual's "performance", such as speed, endurance, relative foot skills, pass accuracy, shot accuracy, etc. However, sport commitment is often overlooked as a variable of performance; theoretically one's sport commitment can have a direct impact on those measurable more fixed variables. This stems from the fact that if an athlete is more committed to a sport, they are more likely to put in extra work to improve when it is not required, which lead to improved on-field performance. In short, the more committed to a sport an athlete is, the better that individual will perform and vice versa.

This theory is important and relevant to all aspects in life in which one looks to improve, though we see it most in mid to high level sports competition. Practically speaking, if a coach can evaluate an athlete's commitment to the sport, the coach and the

team has a greater probability to increase performance based off the desired improvement of the individual players. Athletes who are more committed to a sport are more likely to practice more, and therefore are more likely to have a higher level of performance come competition time (Shershneva, Wang, Lindeman, Savoy, & Olson, 2010). Management and coaching staffs are evaluated on overall performance, which is often reflected by overall win/loss records for team sports. With pressure on the coaches to have their teams perform, recruitment and evaluating personnel becomes an adamant skill to possess. When recruiting, one must consider all variables, including if not prioritizing sport commitment, not just visual performance, say the ability to score or being the fastest on the field.

Results showed a moderately significant positive relationship between performance variables and participants' sport questionnaire score, as well as a moderately significant positive correlation between performance variables and constrained commitment score. Results also revealed the existence of a moderately significant positive relationship between total games played in and self-reported exercise. There were no significant relationships among enthusiastic commitment, or any of the 12 individual sport commitment constructs.

Pertaining to the original hypothesis of the study, there was no significant relationship between self-reported off-season training and in-season playing time from the previous season (performance variable – total minutes). It was hypothesized that participants who had "performed" less, by receiving less playing time, throughout the 2018 season, would consequentially exercise more during the following off-season,

however a significant relationship did not exist. Self-reported exercise was not significantly related to total minutes or average minutes played per game, however a significant positive relationship between total games and self-reported exercise exists, creating the possibility that the more games an individual participates in, the more they self-reportedly exercised that following summer.

The second hypothesis compared average minutes of exercise per week and sport commitment score, to which there was no significant relationship. That said there was a significant positive relationship between sport commitment score and total minutes played, and a significant positive relationship between sport commitment score and average minutes played per game. All participants played in a significant amount of the games throughout the 2018 season, average minutes played per game was recorded, and all participants were committed to coming back the next year. The questionnaire was not sent to participants until the start of the 2019 season, which made the participants eligible. This relationship shows the possibility that players who receive more playing time throughout the season could be more committed to the sport than others who did not meet certain criteria, and with relevance to a following season. Although it cannot be stated that players received more playing time because they had a higher level of commitment; it is plausible that participants have a higher level of sport commitment due to the amount of on-field playing time (average minutes per game) they received during the previous season. Simply stated, the more one plays, the more committed they are to the sport.

The path of discovery in sport commitment goes all the way to the early studies of general psychology, exploring motivation and self-determination in order to excel in life, not just sports. It was not until recently that researchers had the wherewithal to theoretically, practically, and systematically test and apply certain findings to sports and athletics. The relative infancy of sport commitment as it relates to the overall discipline of sport psychology must not go unacknowledged. There is a major discretion in volume of literature on sport commitment pertaining to collegiate level athletics. Considering the extensive number of variables in life that surround an 18-22-year-old college student, let alone a student-athlete, this should not come as a surprise. There are insurmountable new and consequential choices being made in one's life during that time, and this speaks to the lack of literature regarding sport commitment with a collegiate demographic; too many variables, not enough consistent measurable items.

It should also be noted, the nature of the sport of soccer makes it particularly difficult to measure the performance of an individual player, as many of the skills throughout a game are qualitative; which is why playing time was the synonymous variable chosen. Again, there iswe find a gap in the literature that explains performance in the sport of soccer. One study did break down the technical performance of soccer matches using extremely specific physical performance parameters, the most relatable being total distance covered in a match, while playing time was overlooked (Rampinini, Impellizzeri, Castagna, Coutts, & Wisløff, 2009). Although there is a lack of literature cementing the parameters of performance in the sport of soccer, the participation itself can be related to the level of commitment.

Most past literature on sport commitment seeks results concerning future commitment to the sport, simply because years of research has shown the more committed an athlete is the more they will continue to progress and improve. Knowing the makeup of sport commitment, the 12 sub-constructs, self-determination theory, and motivation, previous research has shown that "intrinsic motivation has positively predicted future commitment to sport" (Pedreño et al., 2015). Intrinsic motivation and intrinsic values are buried in an individual sub-construct within the sport commitment model, accounted for in the personal investments sub-construct of enthusiastic commitment. Another more recent study looking at sport commitment among adult soccer players found similar results stating, "the strongest predictors of commitment were enjoyment and personal investment" (Frayeh & Lewis, 2017). Personal investment accounts for two sub-constructs of enthusiastic commitment (Loss and Quantity), while sport enjoyment is a third sub-construct of enthusiastic commitment. While it may appear that those findings contradict the results of this study, as constrained commitment had a stronger relationship with past performance, those previous studies do not even consider performance; and as it relates to this study, volume of performance.

Theoretically, in the sport of soccer, one's performance can be completely measured just by the amount of playing time they have been granted by the coaching staff because the coach judges their performance and/or commitment during previous practices. The athletes covet playing time, and in the free-flowing sport of soccer, the coach looks for consistency from the players while having little control during a game. A change in personnel can have major consequences. While previous studies have failed to include past performance as a variable in looking to predict future levels of commitment,

this study not only includes past performance relating it to their level of said commitment, but also continues to hold participants accountable by including self-reported exercise logs as they prepare for the next season.

From a practical point of view, this information could be vital to a coach at different times throughout a season, a year, or a player's continued development in reaching the team's goals. There are benefits to knowing where players fall on the sport commitment model as well as its constructs and sub-constructs. Obviously, perspectives change as players age, but they can also change based off an individual game or a couple of practices, and this can have implications to one's sport commitment; point being performance matters before we evaluate levels of sport commitment. On top of that, performance matters to how an athlete may approach the off-season. In this case, a player who was given the opportunity to perform more was self-reportedly working more to better prepare himself or herself for the upcoming season. Coaches will always attempt to increase their team's performance, but to what level of commitment does each player really have while considering all aspects of life it is often disregarded. By taking into consideration, all sub-constructs and recent previous performances, whether it is practice or a game, coaches can have a better understanding of how an individual perceives themselves and the game. This could be extremely beneficial in evaluating players with the goal of having one's right players on the field when it matters.

Although, several significant results appeared, this study had many limitations. Considering the small sample, eligibility restrictions allowed 26 players (12 male, 13 female) to qualify for the study, only 11 responded by filling out the questionnaire. This

study can only be applied to and is limited to collegiate soccer players, and no other sport or age demographic. Performance measurements were limited to in-game playing time due to the difficulty in evaluating an individual's precise performance within the sport of soccer. A major limitation within the procedures of this study was that complete questionnaires were received after the start of the 2019 season. Consequentially meaning that self-reported weekly exercise numbers were past estimates of each summer routine, and sport commitment scores could be affected. Questionnaires were received by September 9, by this time four regular season games had been played as well as all pre-season activities, leaving what would be 14 games left to play following data collection. Although this could potentially reflect inaccurate averages, it was procedurally the same for each participant ensuring internal validity, as well as honesty from the players as self-reports ranged from 98 minutes per week to 900 minute per week (1 ½ hours per week–15 hours per week) and sport commitment scores ranged from 215 to 283 out of 290 possible points. However, this should be noted and external validity should be questioned when applying findings to other populations; originally, participants would have been required to take this data down as they worked throughout the summer in preparation for the 2019 season, and would have been viewed as a reflection of commitment. The belatedness of the return of questionnaires can also question the external validity of the SCQ responses, as the questionnaire should have been completed before the 2019 pre-season. Finally, given just 11 participants (seven males, four females) and the deregulation of administration of the sport commitment questionnaire and its return, the external procedural validity is extremely limiting.

Regarding future studies in the field of sport psychology, specifically under the domain of sport commitment, there is a clear and obvious gap in the literature on sport commitment within the entire collegiate demographic. It is completely irresponsible to assume an individual's level of commitment, to said sport, remains constant through that significant time of their life. Additionally, the constructs of the sport commitment model, enthusiastic and constrained, should be further investigated due to the controversial results of this study compared to the others in the past. Finally, whether attempting to evaluate or predict levels of sport commitment, particularly in team sports, recent past performances should be accounted for in some way; the possibility should be acknowledge that an individual on a winning team may have a higher level of commitment to that sport than an individual on a losing team.

Conclusion

In summary, this study indicates that there are positive relationships between previous performances and sport commitment; previous performance and constrained sport commitment; and the study indicates a positive relationship between the number of games an individual plays in and the amount of time they self-reportedly exercise during the summer following that season. There was no significant relationship between previous performance and enthusiastic sport commitment, and no relationship between previous performance and any of the 12 sport commitment subconstructs. Lastly, there was no significant relationship between self-reported exercise over the summer and sport commitment, at any level. Overall, the findings suggest a positive relationship exists

between past performance and sport commitment among collegiate level soccer players, though further studies should be held to explore the extent of the relationship.

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Appendix A: Institutional Review Board Approval Letter

MEMORANDUM

SUNY Cortland
Institutional Review Board

To:	Luke W. Zuber Erik Lind
From:	John Foley, Reviewer on behalf of Institutional Review Board
Date:	August 19, 2019
RE:	Institutional Review Board Approval

In accordance with SUNY Cortland's procedures for human research participant protections, the protocol referenced below has been approved for a period of one year:

Title of the study: Measuring In-Season Playing Time, Off-Season Conditioning Time, and Sport Commitment in NCAA Division III Soccer Athletes.

Level of review:	Expedited	Protocol number:	181937
Project start date: Upon IRB approval		Approval expiration date*:	August 18, 2020

* Note: Please include the protocol expiration date to the bottom of your consent form and recruitment materials. For more information about continuation policies and procedures, visit www.cortland.edu/irb/Applications/continuations.html

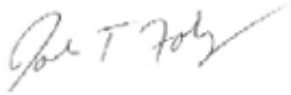
The federal Office for Research Protections (OHRP) emphasizes that investigators play a crucial role in protecting the rights and welfare of human subjects and are responsible for carrying out sound ethical research consistent with research plans approved by an IRB. Along with meeting the specific requirements of a particular research study, investigators are responsible for ongoing requirements in the conduct of approved research that include, in summary:

- obtaining and documenting informed consent from the participants and/or from a legally authorized representative prior to the individuals' participation in the research, unless these requirements have been waived by the IRB;
- obtaining prior approval from the IRB for any modifications of (or additions to) the previously approved research; this includes modifications to advertisements and other recruitment materials, changes to the informed consent or child assent, the study design and procedures, addition of research staff or student assistants, etc. (except those alterations necessary to eliminate apparent immediate hazards to subjects, which are then to be reported by email to irb@cortland.edu within three days);
- providing to the IRB prompt reports of any unanticipated problems involving risks to subjects or others; • following the principles outlined in the Belmont Report, OHRP Policies and Procedures (Title 45, Part 46, Protection of Human Subjects), the SUNY Cortland College Handbook, and SUNY Cortland's IRB Policies and Procedures Manual;
- notifying the IRB of continued research under the approved protocol to keep the records active; and,
- maintaining records as required by the HHS regulations and NYS State law, for at least three years after completion of the study.

Miller Building, Room 206 • P.O. Box 2000 • Cortland, NY 13045-0900
Phone: (607) 753-2511 • Fax (607) 753-5995

In the event that questions or concerns arise about research at SUNY Cortland, please contact the IRB by email irb@cortland.edu or by telephone at (607)753-2511. You may also contact a member of the IRB who possesses expertise in your discipline or methodology, visit http://www.cortland.edu/irb/members.html to obtain a current list of IRB members.

Sincerely,



John Foley, Reviewer on behalf of
Institutional Review Board
SUNY Cortland

Appendix B: Informed Consent

Informed Consent Letter

Kinesiology Department

State University of New York College at Cortland

Title of Research Project: Measuring In-Season Playing Time, Off-Season Conditioning Time, and Sport Commitment in NCAA Division III Soccer Athletes.

The research in which you have been asked to participate is being conducted by Luke Zuber, a candidate for the Master of Science in Exercise Science program in the Kinesiology Department at SUNY-Cortland. You are being asked to participate in this study because of your athletic participation with the varsity soccer team at SUNY-Cortland. I request your informed consent to be a participant in the study described below.

Student Investigator: Luke Zuber

Faculty Supervisor: Erik Lind, PhD
Co-Investigators: Peter McGinnis, PhD
Co-Investigators: Larissa True, PhD

Purpose: The purpose of this study is to examine the relationship of sport commitment with off-season training measures and in-season playing time in a sample of Division III soccer players.

Procedures: Participants will receive individual emails from the lead investigator. The email will contain a standardized introduction of the study along with the Informed Consent. In addition, the email will contain an Excel spreadsheet attachment which includes demographic questions, exercise outside of team conditioning opportunities, and a questionnaire on commitment to sport. Participants who consent will complete the Excel spreadsheet and return to the lead investigator. Participants who do not want to participate can simply respond to the lead investigator stating such and without penalty. Each survey is to be filled out truthfully and to the best of your knowledge.

Length of Participation: It is anticipated that it will take approximately 15-20 minutes to complete all surveys.

Risks Expected: The potential risk associated with the research is limited to confidentiality risk. To ensure confidentiality and minimize this risk, names will not be used and only the lead investigator and faculty committee will have access to the completed surveys. Surveys will be transported on a jump drive by the lead investigator immediately after data collection, and will be stored on the faculty sponsor's office desktop computer in a locked office on the campus of SUNY Cortland.

Benefits Expected: Participation in this study can allow for a better understanding of how in-season playing time, off-season conditioning time, and sport commitment are related. This may assist both athletes and the coaching staff in developing ways to improve all three, which may translate into greater individual and team success.

Protocol 181937

Confidentiality: Your responses are strictly confidential. Only the lead investigator and faculty committee will have access to your responses. Each completed Excel spreadsheet will be assigned a randomly generated Participant Identification Number to be used on any data collection forms. Your name will not be directly connected with your responses.

Freedom to Withdraw: Participation in this study is completely voluntary and there is no penalty for refusal or withdrawal. You are free to withdraw consent at any time without penalty. Even if you begin answering questions and realize, for any reason, that you do not want to continue, you are free to withdraw from the study. Additionally, you may ask the lead investigator to destroy any responses you may have given.

Contact Information: For more information about this study please contact Luke Zuber (607) 341-5465.

For more information about research at SUNY Cortland or information about the rights of research participants, please contact the Institutional Review Board by email irb@cortland.edu, or by phone (607) 753-2511.

I _____have read and understand the activities requested for my involvement in this research, and I consent to participate.

Signature: _____ Date: _____

Researcher's Signature: _____ Date: _____

SUNY Cortland IRB
Protocol Approval Date: 8/19/2019
Protocol Expiration Date: 8/18/2020

Appendix C: Enthusiastic Commitment Matrix

Correlations

		AverageSRex	Totalminutes	Totalgames	Avgminpergame	ECS
AverageSRex	Pearson Correlation	1	.573	.635*	.446	.353
	Sig. (2-tailed)		.065	.036	.169	.287
	N	11	11	11	11	11
Totalminutes	Pearson Correlation	.573	1	.951**	.965**	.399
	Sig. (2-tailed)	.065		.000	.000	.224
	N	11	11	11	11	11
Totalgames	Pearson Correlation	.635*	.951**	1	.858**	.369
	Sig. (2-tailed)	.036	.000		.001	.265
	N	11	11	11	11	11
Avgminpergame	Pearson Correlation	.446	.965**	.858**	1	.414
	Sig. (2-tailed)	.169	.000	.001		.205
	N	11	11	11	11	11
ECS	Pearson Correlation	.353	.399	.369	.414	1
	Sig. (2-tailed)	.287	.224	.265	.205	
	N	11	11	11	11	11

*. Correlation is significant at the < 0.05 level (2-tailed).

**. Correlation is significant at the < 0.01 level (2-tailed).

Appendix D: Enthusiastic Commitment Subconstruct Matrix

Correlations

		AverageSRex	Totalminutes	Totalgames	Avgminpergame	ECS_SE	ECS_VO	ECS_OP	ECS_PIL	ECS_PIQ	ECS_EC
AverageSRex	Pearson Correlation	1	.573	.635*	.446	.309	.375	.393	-.397	-.427	.297
	Sig. (2-tailed)		.065	.036	.169	.355	.256	.232	.226	.190	.376
	N	11	11	11	11	11	11	11	11	11	11
Totalminutes	Pearson Correlation	.573	1	.951**	.965**	.525	.497	.056	.065	-.289	.428
	Sig. (2-tailed)	.065		.000	.000	.098	.120	.870	.849	.389	.189
	N	11	11	11	11	11	11	11	11	11	11
Totalgames	Pearson Correlation	.635*	.951**	1	.858**	.534	.441	.124	-.149	-.345	.396
	Sig. (2-tailed)	.036	.000		.001	.091	.174	.717	.663	.299	.228
	N	11	11	11	11	11	11	11	11	11	11
Avgminpergame	Pearson Correlation	.446	.965**	.858**	1	.546	.500	.003	.201	-.201	.441
	Sig. (2-tailed)	.169	.000	.001		.082	.117	.994	.553	.553	.175
	N	11	11	11	11	11	11	11	11	11	11
ECS_SE	Pearson Correlation	.309	.525	.534	.546	1	.896**	-.078	.366	.094	.923**
	Sig. (2-tailed)	.355	.098	.091	.082		.000	.819	.269	.784	.000
	N	11	11	11	11	11	11	11	11	11	11
ECS_VO	Pearson Correlation	.375	.497	.441	.500	.896**	1	-.239	.479	.065	.937**
	Sig. (2-tailed)	.256	.120	.174	.117	.000		.479	.136	.850	.000
	N	11	11	11	11	11	11	11	11	11	11

ECS_OP	Pearson Correlation	.393	.056	.124	.003	-.078	-.239	1	-.180	.057	-.052
	Sig. (2-tailed)	.232	.870	.717	.994	.819	.479		.596	.869	.879
	N	11	11	11	11	11	11	11	11	11	11
ECS_PIL	Pearson Correlation	-.397	.065	-.149	.201	.366	.479	-.180	1	.371	.539
	Sig. (2-tailed)	.226	.849	.663	.553	.269	.136	.596		.261	.087
	N	11	11	11	11	11	11	11	11	11	11
ECS_PIQ	Pearson Correlation	-.427	-.289	-.345	-.201	.094	.065	.057	.371	1	.099
	Sig. (2-tailed)	.190	.389	.299	.553	.784	.850	.869	.261		.771
	N	11	11	11	11	11	11	11	11	11	11
ECS_EC	Pearson Correlation	.297	.428	.396	.441	.923**	.937**	-.052	.539	.099	1
	Sig. (2-tailed)	.376	.189	.228	.175	.000	.000	.879	.087	.771	
	N	11	11	11	11	11	11	11	11	11	11

*. Correlation is significant at the < 0.05 level (2-tailed).

**. Correlation is significant at the < 0.01 level (2-tailed).

Appendix E: Constrained Commitment Subconstruct Matrix

Correlations

		AverageSRex	Totalminutes	Totalgames	Avgminpergame	CCS_SC	CCS_SSE	CCS_SSI	CCS_DEM	CCS_DES	CCS_CC
AverageSRex	Pearson Correlation	1	.573	.635*	.446	.371	.242	.365	-.193	-.013	.449
	Sig. (2-tailed)		.065	.036	.169	.261	.473	.270	.569	.970	.166
	N	11	11	11	11	11	11	11	11	11	11
Totalminutes	Pearson Correlation	.573	1	.951**	.965**	.580	.477	.364	.044	.384	.285
	Sig. (2-tailed)	.065		.000	.000	.061	.138	.272	.898	.244	.396
	N	11	11	11	11	11	11	11	11	11	11
Totalgames	Pearson Correlation	.635*	.951**	1	.858**	.488	.374	.176	-.152	.251	.316
	Sig. (2-tailed)	.036	.000		.001	.128	.257	.605	.656	.456	.344
	N	11	11	11	11	11	11	11	11	11	11
Avgminpergame	Pearson Correlation	.446	.965**	.858**	1	.544	.534	.445	.202	.526	.196
	Sig. (2-tailed)	.169	.000	.001		.084	.091	.170	.551	.097	.564
	N	11	11	11	11	11	11	11	11	11	11
CCS_SC	Pearson Correlation	.371	.580	.488	.544	1	.434	.311	.295	.329	.558
	Sig. (2-tailed)	.261	.061	.128	.084		.182	.352	.379	.323	.074
	N	11	11	11	11	11	11	11	11	11	11

CCS_SSE	Pearson Correlation	.242	.477	.374	.534	.434	1	.698*	.065	.352	-.268
	Sig. (2-tailed)	.473	.138	.257	.091	.182		.017	.848	.289	.426
	N	11	11	11	11	11	11	11	11	11	11
CCS_SSI	Pearson Correlation	.365	.364	.176	.445	.311	.698*	1	.394	.396	-.223
	Sig. (2-tailed)	.270	.272	.605	.170	.352	.017		.230	.227	.509
	N	11	11	11	11	11	11	11	11	11	11
CCS_DEM	Pearson Correlation	-.193	.044	-.152	.202	.295	.065	.394	1	.817**	-.047
	Sig. (2-tailed)	.569	.898	.656	.551	.379	.848	.230		.002	.891
	N	11	11	11	11	11	11	11	11	11	11
CCS_DES	Pearson Correlation	-.013	.384	.251	.526	.329	.352	.396	.817**	1	-.017
	Sig. (2-tailed)	.970	.244	.456	.097	.323	.289	.227	.002		.961
	N	11	11	11	11	11	11	11	11	11	11
CCS_CC	Pearson Correlation	.449	.285	.316	.196	.558	-.268	-.223	-.047	-.017	1
	Sig. (2-tailed)	.166	.396	.344	.564	.074	.426	.509	.891	.961	
	N	11	11	11	11	11	11	11	11	11	11

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).