Factors Affecting Athletes with Anterior Cruciate Ligament Reconstruction Surgery not to Return to Sport
By: Alex Singy-class of 2015

Abstract
The purpose of this study was to help athletes who have torn their ACL, and have had reconstruction surgery, to better decide whether to return to sport. This was a data mining study. In that publicly available data of 750 athletes, present in books, the internet, articles, surveys, magazines, and any other public form was used for data collection. Chi Squared Tests of Independence between ages, previous time spent in sport, and previous ACL injuries groups were conducted to look for statistically significant p-values (0.398, 3.23E-05, 0.002, 0.455, 0.0001, 3.669E-08, and 0.316). The generalized alternate hypothesis that factors causing athletes to return or not to return to sport are dependent of each other was supported when the athlete spent a large amount of time in sport previously. The rest of the data collected investigating a relationship between the age, having in the past an injured ACL, and returning to sport did not reveal any statistically significant difference. In conclusion, the overall hypothesis that if athletes are between 33-41 years of age, have had previous ACL injuries, and depending on the amount of time spent in sports previously, will not want to return to sport more than athletes who are younger was not supported.

Future Research Ideas
- When conducting future research, it is extremely important that the researchers select only a few variables to study (Gobbi and Francisco, 2006).
- The researchers could do more extensive studies if they focus solely on one variable, and see how it affects only a certain group of athletes.
- For example, women from the ages of 27-30 who play soccer, and then focus on the time they spend in sport.

Pertinent Information to share with a future researcher
- It is challenging to sustain the fact that what causes one athlete not to return to sport, will also cause a different athlete not to return sport. This is because every athlete is different in their activities.
- Kuenze, C. M. (2013). Lower extremity function in active individuals following ACL reconstruction. University of Miami, 1, 1-211.
Abstract
The purpose of this study was to determine whether stretching or dynamic stretching is more effective in pre-game warm up for female volleyball players so that they can perform with maximum vertical jump height. During the first week of this study participants completed either static or dynamic stretching for five days. On the fifth day participants were tested for vertical jump height using a Vertec (a tool for measuring jump height). During the following week of the study participants completed the stretching routine that they did not complete the first week, and again were tested for vertical jump height on the tenth day of the study. A two-tailed t-test with a set alpha value of 0.05 revealed a p-value of 0.464 therefore no statistically significant difference between static and dynamic stretching’s effect on vertical jump height. The final results did not support the original hypothesis that if volleyball players completed dynamic stretching then they would produce a higher vertical jump height compared to static stretching. In conclusion, this study showed that neither static stretching nor dynamic stretching has an effect on vertical jump height performance by female volleyball players during warm up preceding athletic performance.

Future Research Ideas
1. Players of sports other than volleyball, such as basketball and track, could be tested due to their dependence on vertical jump height.
2. Various types of stretching, such as ballistic, could be used rather than static and dynamic.
3. Males could also be tested.

Pertinent Information to share with a future researcher
1. It is challenging to get enough human participants involved in the study. I recommend you choose human participants you know will return forms.
2. A foundational paper to read for this study is:
The effect of time on the validity of Piagetian Preoperational Stage Theories
By Anna Wingfield Class of 2015

Abstract
The purpose of this study was to gain a better perception of the mental development and capabilities of a child by testing Piaget’s. Four tests involving flower bouquets, fictitious stories, visuals with water, Play-Doh, and were candy, and a re-creation of a mountain with photographs used to collect data on first grade students at a local primary school. Various questions were asked to the children, and their responses and decisions provided a variety of data needed to run the necessary tests. The tests were constructed by following Piagetian outlines, and the data was analyzed with four Chi-Squared tests. The alpha value remained .05 in all comparisons, with the p-values ranging between .100 and 1.00, all revealing statistically insignificance for the tests, yielding a rejection of the alternate hypothesis. This failed to support the hypothesis that if various theories on cognitive development posed by Jean Piaget are tested by recreating the experiments used by Piaget himself, then the results will show that time has affected the validity of Piaget's statements and will support the idea that there are new factors affecting a child's mental development. This study allowed further insight on the cognitive patterns and development of children in the Preoperational Stage System and solidified Piaget’s proposed theories by showing that his predictions remained consistent nearly 100 years later.

Future Research Ideas

1. For more in-depth research results, one could focus on one specific subtest.

2. When testing students, one could study the different sibling relationships.

Suggestions to a future researcher

1. There is a lot of liability working with young children; make sure to have a lot of communication with the teacher.

The Effect of Music on an Adolescent’s Sleep Quality at Night
By Brandon Walker Class of 2015

Abstract
The purpose of this study was to see if music affects the sleep quality of adolescents. This study was conducted at each of the twelve teenage participant’s houses. These twelve participants were randomly selected from a local high school roster. Each participant was required to listen to rock music for one week, and classical for the following week while he or she fell asleep at night. In the morning following trial nights, the survey answers had corresponding numbers that would add up to give the total score for each day, similar to published instruments for assessing sleep quality, like the Pittsburgh Sleep Quality Index and the Epworth Sleepiness Scale. After the two week period, the average scores for both weeks for each participant were compared to the control nights with no music in a two sample t-test (alpha value = 0.05). A p-value of 0.453 was produced, revealing no statistically significant difference in sleep quality with music and without music. This did not support the research hypothesis, that music would have some effect on the sleep quality of adolescents. An ANOVA was also run to see if there were any significantly different mean scores within the participants, which gave a p-value of 0.0006, showing that there was a statistically significant difference between some of the participants. In summation, music did not significantly affect the sleep quality of adolescents.

Future Research Ideas

• In a future study, try a controlled environment to minimize confounding variables.
• Medical instruments could be used to monitor brain waves.
• You could use different genres of music could be used.

Suggestions to a Future Researcher

1) Do your best to stay on track, this makes the whole research process run smoothly.
2) Take your time and get accurate results.
3) Put as much effort in as possible. Remember, this is a very important part of your junior year!
The effects of siblings on the social skills of second grade students  
By: Kate Carrington-class of 2015  

Abstract  
The purpose of this study was to test the effects of siblings on social skills development. The participants were second grade students from a local elementary school. The social skills of the participants were rated using a section of the teacher form of the Social Skills Rating System. Ratings were gathered from the students’ primary teacher and additional ratings were collected from a secondary teacher solely to compare to the ratings of the primary teacher. The average rating of social skills for children without siblings was 32 out of 60; the average rating of social skills for children with siblings was 52.8 out of 60. A two sample t-test was performed on the data between two groups (alpha = .05): children with siblings and children without siblings. This did not support the research hypothesis that children with siblings would have higher social skills. Another t-test was performed on the two groups of younger and oldest children. The research hypothesis, which stated that if a child was a younger child, then the child would have higher social skills, was not supported, and the null was retained. In summation, no relationship was found between the presence of siblings or birth order and ratings of social skills.  

Future Research Ideas  
1. Further comparative research should be performed on a wider range of ages in participants, to discover when the effects wear off.  
2. It would be interesting to test the effects of the various age differences of siblings on social skills.  
3. Possibly include step-siblings in the study.  

Pertinent Information to share with a future researcher  
1. It is challenging to get enough human participants involved in the study. Only one only child returned a consent form, and this drastically influenced the results of my study.  
2. Finding a copy of the Social Skills Rating System is not easy, so using only a portion of the forms increases the likelihood of acquiring one.
Is an Individual’s preference of attraction a generationally consistent behavior?
By Cole Campbell-Class of 2015

Abstract
The purpose of this study was to compare the differences in attraction and desirability preferences between parent and child, in order to identify if attraction preference was a generational component. The experiment conducted contained ten subject pairs that consisted of a parent and their child. The parent and the child were asked to fill out a Marital Preference Questionnaire that had them rank the importance of certain character traits in a potential mate. They were also asked to rank a select group of photos of strangers from the opposite sex based on how attractive they perceived them to be. The data gathered was analyzed using a chi-square test of independence. The alpha value for the study was set at 0.05, and through the ten groups, the p-values ranged between 0.6637 and 0.9671. The research hypothesis, that stated, if the correlation of attraction preference between, parent and child is similar, when analyzing both photos and questionnaire, than it can be concluded that attraction preference has a generational component, was not supported. In this study, no significant data was found to support if attraction preferences were a generationally consistent behavior.

Future Research Ideas
1. Further comparative research should be done on all aspects of attraction preferences.
2. Research on determining how the media influences an individual’s preference of attraction.
3. Research on determining attraction preferences between male and females.

Suggestions for future researcher
1. Make sure to hand out double the amount of forms to ensure you reach your goal for the number of participants.
2. A fundamental paper to read for this study is:
The differences between two-dimensional and three-dimensional teaching methods
By: CT Skorcz- class of 2015

Abstract
The purpose of this study was to see which method of teaching (two-dimensional, three-dimensional, or two- and three-dimensional) was the most effective when learning to tie a square knot in order to know how to increase the number of students able to understand a concept in a typical classroom. Three classes of eighth grade students at a local middle school in Lynchburg, Virginia were tested, each in a different way; class one was given solely verbal instructions, class two was given solely visual instructions, and class three was given both verbal and visual instructions. The data was analyzed with an Analysis of Variance (ANOVA) test. The alpha value was set at 0.05 and the p-value was 0.679. The results showed no statistically significant difference among the different methods of teaching tested. The research hypothesis, if students are taught how to tie a square knot using a combined two-dimensional and three-dimensional approach, then a higher percentage of the students will tie the square knot correctly than those who were taught using an uncombined approach, was not supported. It was concluded from this study that the capability of a student to correctly complete a task does not necessarily depend on the teaching method.

Future Research Ideas
1. Further comparative research should be done to target specific classes and topics, such as certain math techniques or foreign language vocabulary
2. The ages of the students could also be investigated for success rates
3. The sex of the students might have a correlation with ability to learn a new technique

Pertinent Information to share with a future researcher
1. It is challenging to get enough human participants involved in the study. I recommend expecting to receive 50% of the forms you hand out.
2. A foundational paper to read for this study is:
The effect of inaccurate time feedback on performance time in a 3200 meter run.
By Dan Brown - Class of 2015

Abstract
The purpose of this research was to examine the effect of inaccurate time feedback on performance time in a 3200 meter run. Ten cross-country runners performed two 3200 meter runs on an outdoor track at a goal pace they were supposed to be able to sustain with a twenty minute rest in-between each run. In the first trial, they were accurately told the time that elapsed after every 400 meter lap. However, in the second trial, they were told a time that was four seconds slower per lap for each 400 meters. In the first trial, the participants had an average completion time of 803.5 seconds, while in the second trial they had an average completion time of 831.8 seconds. A paired t-test revealed a statistical significance between the groups, yielding a p-value of 0.0138 (alpha level=0.05). The research hypothesis, that if runners are given inaccurate time feedback, then they will speed up to correct for it (thus producing the fastest performance time), was not supported. The data in this experiment showed that inaccurate time feedback was not helpful, but detrimental, to the runners.

Future Research Ideas

1. Trials should be run on separate days, all-out, instead of with goal times.
2. Time feedback should be given by a calibrated clock.
3. What is the effect of competition and rewards on running performance?

Pertinent Information to share with a future researcher

1. Give out consent forms early, and expect only a percentage returned. When working with a sports team, make sure to communicate with the coach well.
2. A foundational paper to read for this study is:
3. If you find a good source, look at its works cited to find more.
The effects of superstitious beliefs on high school students and their propensity to make risky decisions.
By: Erika Esterline-class of 2015

Abstract
The purpose of this study was to increase the understanding of how behavioral decisions are made. High school students were split into three groups; not primed, primed for good luck, and primed for bad luck. After participants were primed they completed a Domain-specific Risk-attitude Scale for risky behavior. A one-way ANOVA test was run using seven data points for each of the three groups, an alpha of 0.05 was set and the test resulted in a p-value of 0.859. The data failed to show a statistically significant difference, therefore the research hypothesis, that participants, if primed for good luck, will rank higher on the Domain-specific Risk-attitude Scale for risky behavior than the participants not primed, while those primed for bad luck will rank lower on the Domain-specific Risk-attitude Scale for risky behavior, was not supported. In summation, there was no relationship found between belief in superstitions, such as concepts of good and bad luck, and the propensity that an individual would make a risky decision.

Future Research Ideas
1. Further comparative research should be done using different types of priming with participants.
2. Participants of different ages could also be used in order to see if that is also a factor.
3. Research could also be done to test how the area or even different schools can change what impact superstitions have on individuals.

Pertinent Information to share with a future researcher
1. It is challenging to get statistically significant data with such a narrow range on the scale, this should be increased.
2. A foundational paper to read for this study is:
The Effect of Mental Strategies on Penalty Kick Accuracies.
By: Jacob Spano-class of 2015

Abstract
The purpose of this study was to determine if various mental strategies such as positive expectancy imagery, taking three deep breaths, and a specific focus on the proper mechanics of penalty shots would decrease athletes’ anxiety levels, thus increasing their accuracy in penalty shoot-outs. This study was conducted at a local soccer field on November 16, 2013. Participants took turns taking penalty shots at randomly assigned sections of the goal. In the first series, they took shots as they normally would, then in the second series they took shots with a randomly assigned mental strategy. After the pre and post accuracy rates were calculated, they were used to run a multi factorial analysis of variance (ANOVA) test. This test, with a set alpha value of .05, revealed a p-value of .85, and showed no statically significant difference. This data did not support the research hypothesis that if high-school soccer athletes used different mental strategies, such as taking three deep breaths, using positive expectancy imagery, and intensifying focus, then the accuracy of their penalty shots would increase. In summation, the use of various mental strategies during penalty kick shoot outs does not increase accuracy.

Future Research Ideas
1. Focus on one specific mental strategy in order to increase sample size.
2. Use a design that controls the area of the goal that would be aimed for.
3. Use a design that more closely simulates an actual penalty-kick situation.
4. Focusing on the increase or decrease of pressure levels rather than accuracy.

Pertinent Information to share with a future researcher
1. It is challenging to get enough human participants involved in the study. I recommend expecting to receive 50% of the forms you hand out.