

## CHAPTER 4

### RESULTS

This chapter explores the research study's findings, specifically highlighting how patients' rate of recovery following arthroscopic ACL reconstruction are impacted by their adherence to prescribed quadriceps strengthening exercises. The purpose of this study was to assess patient compliance with postoperative routines of exercise, comprehend how adherence impacts recovery outcomes, and identify key barriers to patient adherence to prescribed rehabilitation exercises.

#### 4.1 Reliability Analysis

This technique's objective is to determine the amount of reliable and unreliable data. Although reliability is calculated the other factors, but the demographic variables' reliability is not calculated.

Reliability Analysis	
Cronbach's Alpha Value	0.745

The questionnaire's items are internally consistent, and the overall score is an accurate measure of the concept being evaluated, according to the Cronbach's alpha value of 0.745. This indicates that the questionnaire may be used to measure the construct with confidence because of its high degree of reliability.

#### 4.2 Demographic Characteristics

To evaluate the demographic variables of this study “Impact of compliance on recovery rate in Arthroscopic ACL reconstruction patients performing Quadriceps strengthening exercises”, we firstly use frequency distribution and graphs for all demographic characteristics variables.

### 4.1.1 Gender Distribution

Table 4.1: Gender Distribution

Gender	Frequency	Percentage (%)
Male	18	40.0
Female	27	60.0
Total	45	100

Figure 1: Gender

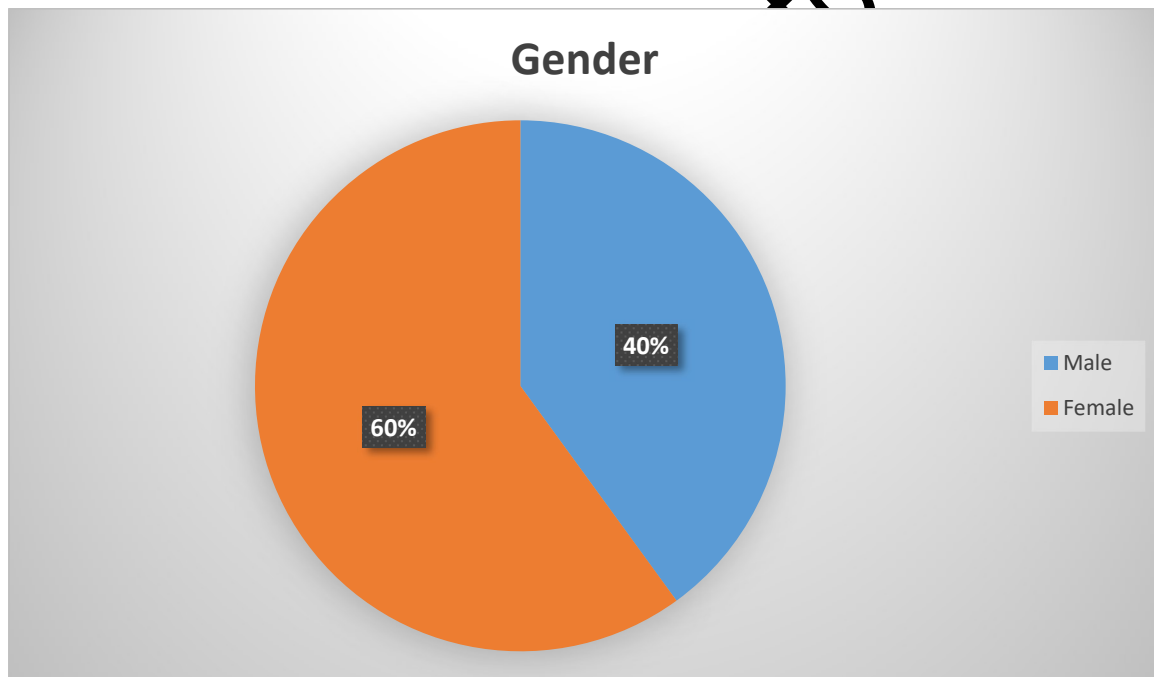


Table 4.1 shows the gender distribution of the total 45 study participants, in which 18 (40.0%) are males and 27 (60.0%) are females. This gender distribution sheds light on the demographics of the sample of patients receiving arthroscopic ACL reconstruction and exercises that strengthen the quadriceps afterward. The study's greater percentage of female participants (60.0%) raises the possibility of a disparity in gender or an increased incidence of ACL injuries in the female population. This suggesting that females may be more likely than males to feel pain or discomfort while performing the activities, which could result in decreased compliance. Females can also have

extra responsibilities at work and at home, which could make it difficult for them to find the time to do the exercises.

#### 4.1.2 Occupation

Table 4.2: Occupation

Occupation	Frequency	Percentage (%)
Full-time employed	7	15.6
Part-time employed	9	20.0
Unemployed	11	24.4
Student	8	17.8
Retired	10	22.2
Total	45	100

Figure 2: Occupation

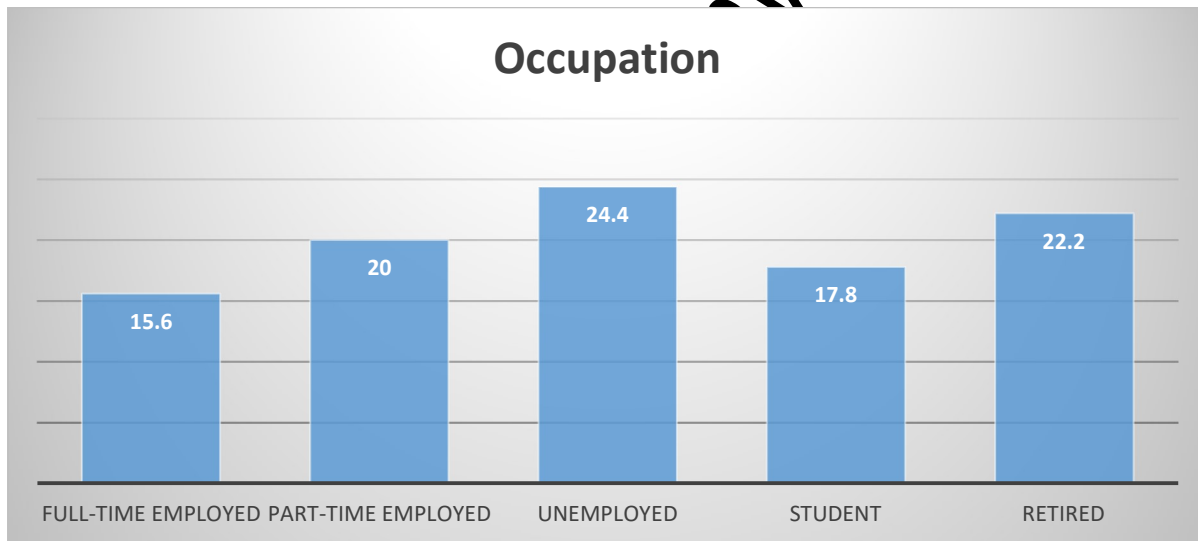


Table 4.2 shows the participants' distribution among the different occupations. People with a variety of occupations backgrounds are included in the study, which offers significant information on the characteristics of the sample population following arthroscopic ACL reconstruction and conducting prescribed quadriceps strengthening exercises.

According to the above table and graph, almost 7(15.6%) participants are full-time employed, 9(20.0%) are part-time employed, 11(24.4%) are unemployed, 8(17.8%) are students, and

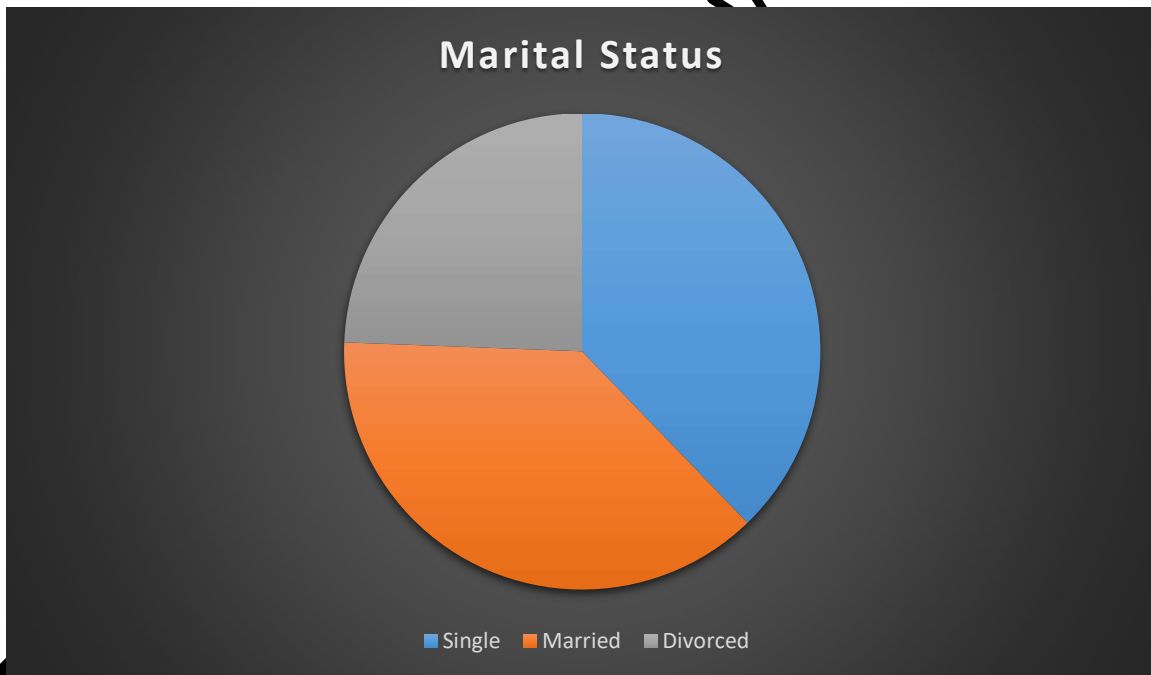
10(22.2%) are retired. These findings suggest that unemployed and retired people have more time to complete the exercises as compared to the employed and students.

### 4.1.3 Marital Status

Table 4.3: Marital Status

Marital Status	Frequency	Percentage (%)
Single	17	37.8
Married	17	37.8
Divorced	11	24.4
Total	45	100

Figure 3: Marital Status



The participant's marital status distribution is shown in Table 4.3. For the purpose of explaining their experiences and potential effects on rehabilitation outcomes, it is essential to determine the marital status of patients following arthroscopic ACL reconstruction and performing suggested quadriceps strengthening exercises.

Among the 45 participants of the study, the most common marital statuses are single (37.8%) and married (37.8%). Similarly, 24.4% participants are divorced. This suggests that the married people

are more engage and having the social support to performing the exercises rather than the single people.

#### 4.1.4 Education

Table 4.4: Education

Education	Frequency	Percentage (%)
High School	10	22.2
College	9	20.0
Bachelor's Degree	14	31.1
Master's Degree	4	8.9
Doctorate or Professional Degree	8	17.8
<b>Total</b>	<b>45</b>	<b>100</b>

Figure 4: Education

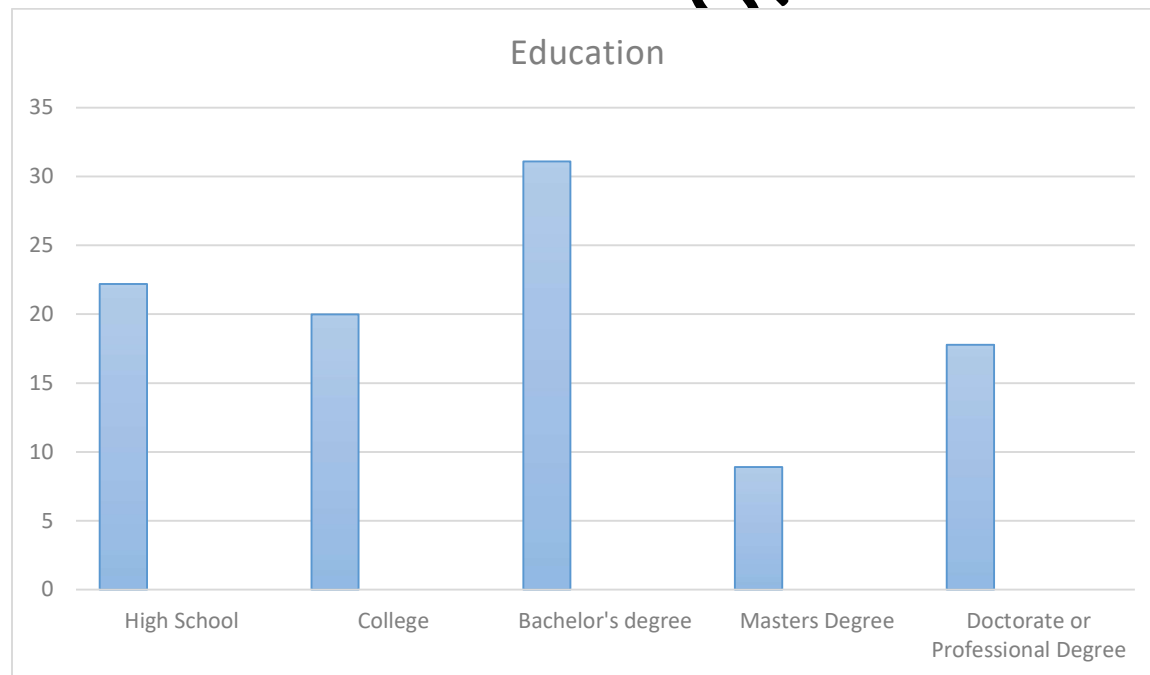


Table 4.4 demonstrate the distribution of educational levels among the 45 study participants, bachelor's degree constitutes 31.1% of all levels of educational completion, with high school diploma following in next (22.2%), doctorates or professional degrees (17.8%), college degrees

(20.0%), and master's degrees (8.9%) followed closely after. People with more education might be better able to solve problems and understand the significance of completing the exercises, which could help them get further any barriers to compliance.

#### 4.1.5 Height

Table 4.5: Height

Height	Frequency	Percentage (%)
Less than 5 feet	11	24.4
5 feet to 5 feet 5 inches	5	11.1
5 feet to 6 inches to 5 feet	10	22.2
6 feet 1 inch to 6 feet 5 inches	11	24.4
Over 6 feet 5 inches	8	17.8
<b>Total</b>	<b>45</b>	<b>100</b>

Figure 5: Height

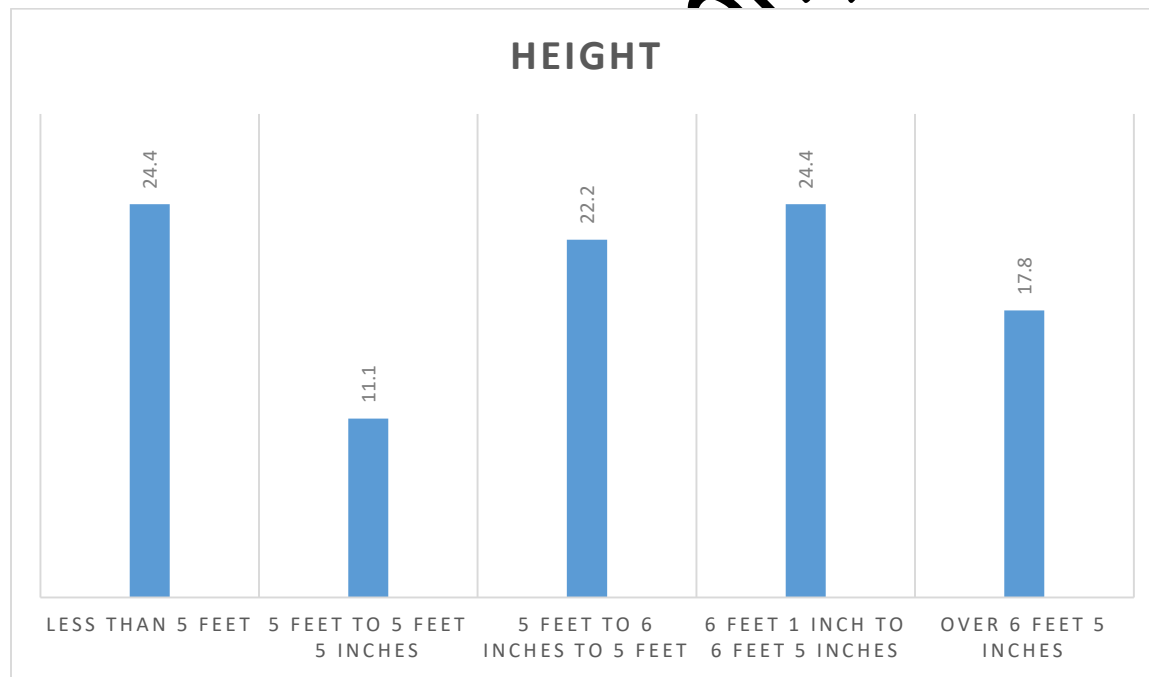


Table 4.5 reveals the height among the 45 study participants, the most common height category is 6 feet 1 inch to 6 feet 5 inches (24.4%) and less than 5 feet (24.4%). Furthermore, 5 feet to 6 inches to 5 feet category followed 22.2%, 5 feet to 5 feet 5 inches (11.1%) and over 6 feet 5 inches

(17.8%). This suggest that exercises requiring bending or stooping may be more difficult for taller people, whereas exercises requiring reaching or jumping may be more difficult for shorter people.

#### 4.1.6 Weight

Table 4.6: Weight

Weight	Frequency	Percentage (%)
Less than 60 pounds	6	13.3
70-80 pounds	11	24.4
81-90 pounds	7	15.6
91-100 pounds	6	13.3
100 plus pounds	15	33.3
<b>Total</b>	<b>45</b>	<b>100</b>

Figure 6: Weight

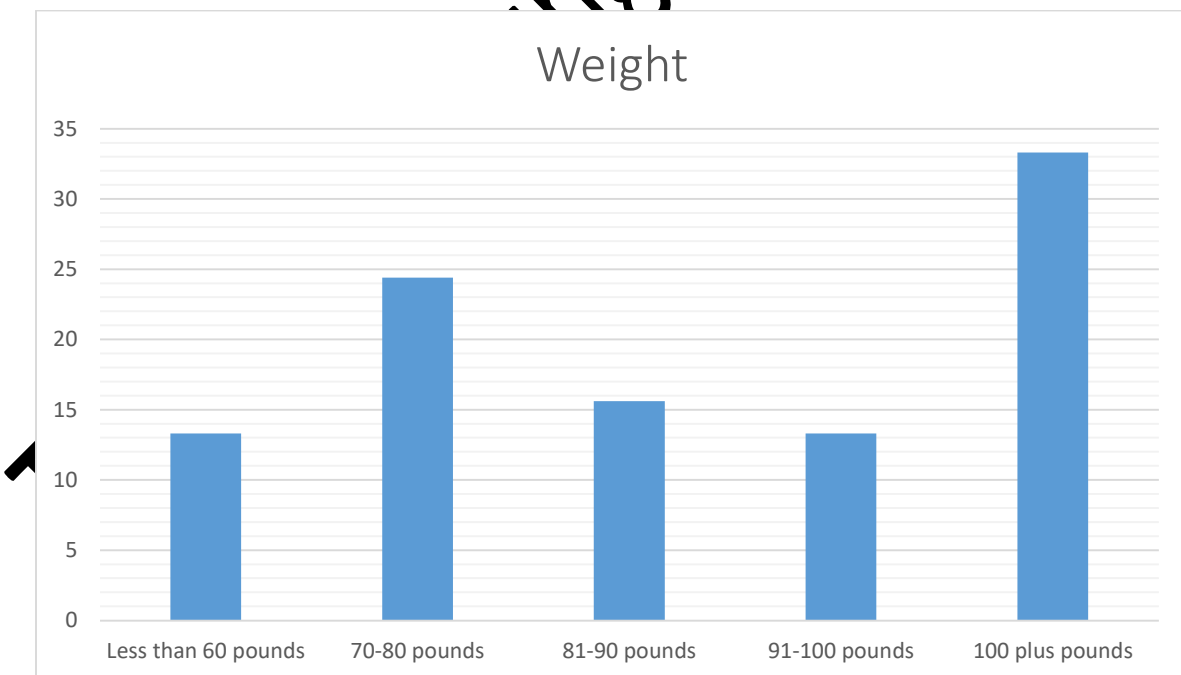


Table 4.6 shows the weight of the 45 study participants, the weight for 91–100 pounds (13.3%), less than 60 pounds (13.3%), 70–80 pounds (24.4%), and 81–90 pounds (15.6%) are the most common weight categories, as you can see in figure 6. The most common weight group is 100 plus pounds (33.3%).

Some participant's weight is much more than others, and the weights are evenly distributed. Of the participants, approximately 30% are 100 plus pounds in weight. This indicates that many participants in the study were overweight. Compared to persons who weigh less, this group could require specialized care throughout recovery. However, a small percentage of the study's participants weigh less than 60 pounds. This suggests that some study participants may have underweighted. The varying weights of the study participants demonstrate the significance of taking a person's size into consideration when evaluating recovery from ACL reconstruction.

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#### 4.1.7 Body Mass Index (BMI)

Table 4.7: BMI

BMI	Frequency	Percentage (%)
Underweight (less than 18.5)	7	15.6
Normal weight (18.5 to 24.9)	15	33.4
Overweight (25 to 29.9)	13	28.8
Obese (30 or more)	10	22.2
Total	45	100

Figure 7: BMI

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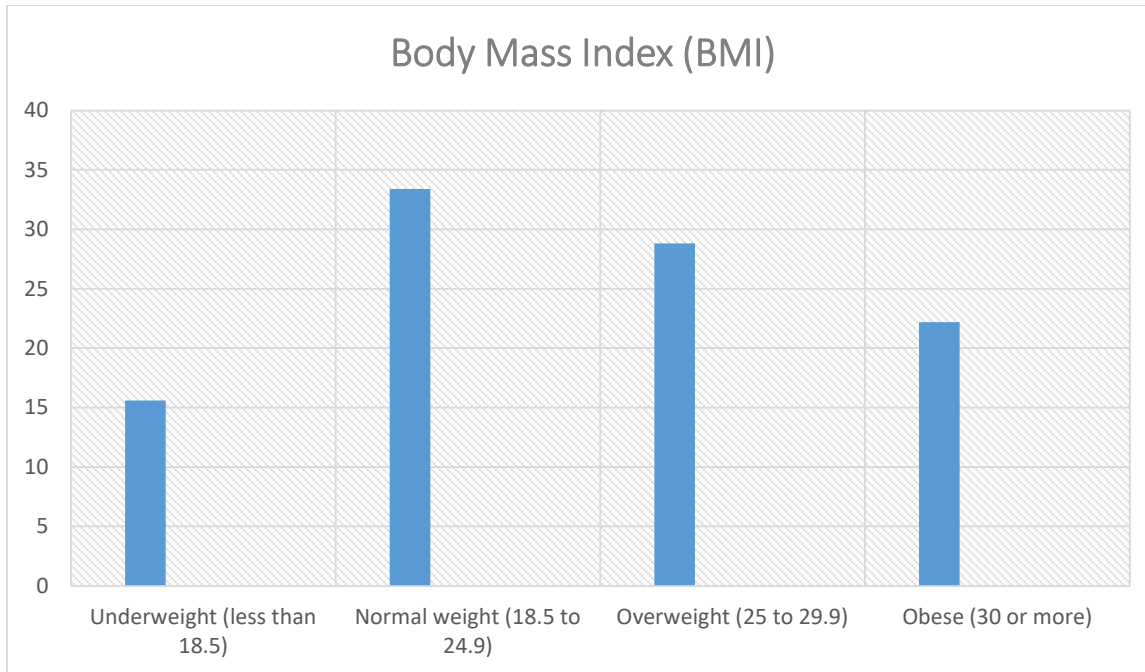


Table 4.7 shows the distribution of Body Mass Index (BMI) among patients receiving arthroscopic ACL reconstruction and engaging prescribed quadriceps strengthening exercises. Almost 33.4% of the sample are within the normal weight range (18.5 to 24.9). This indicates that a significant percentage of individuals had BMIs that corresponded to the normal for their height, indicating that the study population's weight distribution was basically healthy.

Furthermore, 28.8% of participants fall into the overweight category (25 to 29.9), suggesting that there are people with higher BMIs. This category presents issues regarding the potential impact of being overweight on the results of rehabilitation and compliance of prescribed exercises. Moreover, 22.2% of people are obese (30 or more), indicating a minority that can experience particular difficulties with load-bearing, biomechanics, and general participation in rehabilitation exercises. Seven individuals, representing 15.6% of the sample as a whole, fall into the underweight (less than 18.5) category. People in this category might have specific requirements when it comes to their nutritional state and possible difficulties performing rehabilitation exercises, which emphasizes the necessity for specialized methods to meet such needs.

### 4.3 Descriptive Statistics

Table 4.8: Descriptive Statistics for Compliance with Quadriceps Strengthening Exercises

Compliance with Quadriceps Strengthening Exercises		
Statements	Mean	Standard Deviation
I consistently followed my prescribed quadriceps strengthening exercises as recommended by my healthcare provider.	2.88	1.43
I found it challenging to adhere to my exercise regimen due to pain or discomfort.	2.97	1.35
I believe that performing quadriceps strengthening exercises is crucial for a successful recovery after ACL reconstruction surgery.	2.80	1.45
I was motivated to complete my exercises regularly because I understood their importance in my recovery.	2.37	1.49
The exercises prescribed to me were easy to understand and perform correctly.	2.53	1.19

Table 4.8 provides a detail perspectives of the study participants compliance with quadriceps strengthening exercises arthroscopic ACL reconstruction with mean and standard deviation values for all this factor statements. The standard deviation shows how variable or spread these responses are, whereas the mean values show the average responses.

The statement “I consistently followed my prescribed quadriceps strengthening exercises as recommended by my healthcare provider” has the mean of 2.88 and the standard deviation of 1.43. This suggests that the majority of participants reported regularly performing their prescribed quadriceps exercises. This result suggests the majority of people performed their prescribed routine of strengthening exercises for the quadriceps. This is encouraging because

strengthening exercises to strengthen the quadriceps are crucial to the healing process following ACL reconstruction surgery.

The statement “I found it challenging to adhere to my exercise regimen due to pain or discomfort” has the mean of 2.97 and the standard deviation of 1.35. This shows that most participants found it difficult to maintain their workout regimen due to pain or discomfort. This finding suggests that pain or discomfort regularly made it difficult for individuals to follow their workout regimens. Considering how difficult ACL reconstruction surgery can be, this is not shocking. But it's important to remember that pain or discomfort shouldn't be an excuse to stop doing the exercises entirely. Instead, participants should discuss how to control their discomfort with their healthcare provider in order to continue with the activities.

The statement “I believe that performing quadriceps strengthening exercises is crucial for a successful recovery after ACL reconstruction surgery” has the mean of 2.80 and the standard deviation of 1.45. This suggests that the majority of participants believed that engaging in quadriceps strengthening exercises is essential to a full recovery after ACL reconstruction surgery. This result implies that participants understood the value of improving their quadriceps exercises for their recovery. This is crucial because ensuring patients aware of the significance of a treatment can encourage them to follow it throughout.

The statement “I was motivated to complete my exercises regularly because I understood their importance in my recovery” has the mean of 2.37 and the standard deviation of 1.49. This shows that most participants felt obliged to perform the exercises regularly because they understood how crucial they were to their recovery. This finding suggests that people's regular completion of the exercises was motivated by their understanding of their relevance. This is in line with the findings of Statement 3, which show that participants were well aware of the need of quadriceps strengthening exercises for their reconstruction.

The statement “The exercises prescribed to me were easy to understand and perform correctly” has the mean of 2.53 and the standard deviation of 1.19. It shows that once they realised how important the exercises were to their recovery, the majority of individuals felt compelled to perform them on a daily basis. This result implies that people's perception of the exercises' importance drove them to consistently complete them. This is consistent with Statement 3's

findings, which demonstrate that participants understood the importance of performing quadriceps strengthening exercises to aid in their rehabilitation.

Table 4.9: Descriptive Statistics for Impact on Recovery

Impact on Recovery		
Statements	Mean	Standard Deviation
I have noticed improvements in my knee strength since starting the prescribed exercises.	3.11	1.46
The range of motion in my knee has improved since I began my rehabilitation exercises.	3.40	1.28
I have experienced a reduction in pain levels as a result of my exercise routine.	2.93	1.37
My overall quality of life has improved since I started my rehabilitation program.	3.17	1.38
I have been able to return to my pre-injury activities more quickly due to my commitment to the exercises.	2.77	1.56

Table 4.9 shows the mean and the standard deviation of participant's responses about the impact of prescribed quadriceps strengthening exercises on recovery from ACL reconstruction surgery.

The statement "I have noticed improvements in my knee strength since starting the prescribed exercises" with a mean score of 3.11, falling between the ranges between "agree" and "strongly agree" on the Likert scale, participants generally believed their knee strength had improved after starting the prescribed exercises. There appears to be some variation in the responses, as indicated by the 1.46 standard deviation, with particular individuals claiming greater improvements than others. This implies that after ACL surgery, knee strength can be effectively increased with quadriceps strengthening exercises.

The statement “The range of motion in my knee has improved since I began my rehabilitation exercises” the mean participant score, which is 3.40 suggests that, after beginning rehabilitation exercises, individual’s knee joint range of motion generally improved. In comparison to Statement 1, the standard deviation of 1.28 indicates lower response variability, suggesting that most participants experienced appreciable increases in knee joint mobility. This implies that after ACL surgery, knee joint mobility can be successfully improved by engaging in quadriceps strengthening exercises.

The statement “I have experienced a reduction in pain levels as a result of my exercise routine” The majority of participants reported experiencing reduced discomfort after beginning the recommended exercises, with a mean score of 2.93. There seems to have been some variety in participant responses, with a standard deviation of 1.37 suggesting that some reported a greater degree of pain relief than others. This suggests that quadriceps strengthening exercises may be beneficial in lowering pain following ACL surgery, albeit the exact amount of pain alleviation may vary from person to person.

The statement “My overall quality of life has improved since I started my rehabilitation program” with a mean score of 3.17, participants generally agreed that their overall quality of life had improved once the rehabilitation program started. With a standard deviation of 1.38, it appears that responses varied somewhat and that some people reported more significant modifications than others. It demonstrates that after an ACL reconstruction, strengthening exercises for the quadriceps may improve quality of life.

The statement “I have been able to return to my pre-injury activities more quickly due to my commitment to the exercises” with a mean score of 2.77, most participants thought that sticking to the prescribed exercises helped them return to their pre-injury activities more quickly. The responses varied somewhat, as indicated by the 1.56 standard deviation, with some participants reporting a quicker return to activities than others. This shows that strengthening exercises for the quadriceps may help accelerate the recovery process and facilitate a faster return to pre-injury physical activity.

*Table 4.10: Descriptive Statistics for Barriers and Challenges*

<b>Barriers and Challenges</b>		
<b>Statements</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Please rate the extent to which pain or discomfort has hindered your compliance with prescribed exercises.</b>	2.78	1.47
<b>How motivated were you to adhere to your exercise regimen during challenging or frustrating phases of your recovery?</b>	2.98	1.30
<b>To what extent did a lack of time or difficulty integrating exercises into your daily routine impact your compliance?</b>	3.00	1.33
<b>Did you receive adequate support and guidance from your healthcare provider or physical therapist to address any barriers to compliance?</b>	3.11	1.49
<b>Overall, how satisfied are you with your experience and progress in ACL reconstruction rehabilitation?</b>	2.87	1.53

Table 4.10 shows the mean and the standard deviation of participant's responses about the barriers and challenges faced by participants in adhering to prescribed quadriceps strengthening exercises following ACL reconstruction surgery.

The statement "Please rate the extent to which pain or discomfort has hindered your compliance with prescribed exercises" with a mean score of 2.78, most participants indicated that pain or discomfort caused it to be difficult for them to follow the prescribed exercise schedule. The 1.47 standard deviation indicates some variation in the responses, with some people reporting more challenges connected to pain than others. This implies that in order to maximize treatment results

and compliance, pain management should be a crucial component of ACL reconstruction rehabilitation programs.

The statement “How motivated were you to adhere to your exercise regimen during challenging or frustrating phases of your recovery?” the mean score of 2.98 shows that, regardless challenging or frustrating phases of their recovery, participants were generally motivated to stick to their exercise schedule. The 1.30 standard deviation indicates some variation in the responses, indicating that some participants faced more difficulties with motivation than others. This implies that improving compliance may benefit from implementing motivation-boosting techniques such goal-setting that is acceptable, evaluating construction, and enlisting the help of peers.

The statement “To what extent did a lack of time or difficulty integrating exercises into your daily routine impact your compliance?” the mean score of 3.00 shows that most participants believed their compliance was slightly impacted by a lack of time or difficulties implementing exercises into their daily routine. The 1.33 standard deviation indicates some response variability, with some participants reporting greater difficulty managing their time than others. This shows that customizing workout plans to fit each person's schedule and preferences might enhance compliance.

The statement “Did you receive adequate support and guidance from your healthcare provider or physical therapist to address any barriers to compliance?” With a mean score of 3.11, which is in the middle between "agree" and "strongly agree" on the Likert scale, participants generally felt that their physical therapists or healthcare providers provided them with enough assistance and guidance to resolve any barriers to compliance. The 1.49 standard deviation indicates that there may have been considerable variation in the responses, with some participants receiving more thorough support than others. This shows that in order to maximize compliance and treatment outcomes, it is essential to provide continuing support, address specific problems, and customize interventions to meet personal requirements.

The statement “Overall, how satisfied are you with your experience and progress in ACL reconstruction rehabilitation?” the mean participant score of 2.87, suggests that most participants had a moderate level of satisfaction with their experience and the rehabilitation process for ACL reconstruction. A standard deviation of 1.53 indicates that there may be some variation in participant satisfaction, with some reporting higher levels of satisfaction than others. This implies



that even though participants felt that their experiences had been positive overall, patient satisfaction and rehabilitation program optimization could still use some work.

#### 4.4 Pearson Correlation Coefficient

Correlation analysis is conducted to check the relationship between the Compliance with Quadriceps Strengthening Exercises and the participant's demographic variables such as gender, age, Education, occupation, height, weight and BMI (Body Mass Index). The Pearson correlation coefficient (r) of different variables has been analyzed that shows the direction of correlation between them. The value of r ranges from positive 1 to negative 1. The positive value of r signifies that both the variables move in the same direction, while its negative value implies the two variables move in the different direction.

Table 4.11: Correlation

	Gender	Age	Education	Occupation	Height	Weight	BMI
<b>Compliance with Quadriceps Strengthening Exercises</b>	-1.56	3.23	3.15	-2.05	3.05	2.79	-2.16

Table 4.11 reveals the correlation coefficients values between various demographic variables Compliance with Quadriceps Strengthening Exercises following ACL reconstruction surgery.

Gender and compliance with quadriceps exercises have a -1.56 correlation coefficient. The opposite relationship shows that there might be a slight tendency for females to compliant with the exercises more than males did. Age and compliance with quadriceps strengthening activities have a 3.23 correlation coefficient. Considering this positive connection, it is possible that older individuals will generally comply with the exercise more than younger people. The level of

education and compliance with quadriceps exercises had a 3.15 correlation coefficient. The observation of a positive relationship implies that persons with higher educational attainment may exhibit more compliance with the exercises compared to those with lower levels of education.

The occupation and compliance with quadriceps exercises had a -2.05 correlation coefficient. The opposite relationship raises the possibility of an insignificant trend where people in occupations that are physically demanding tend to be less adherence to their routines of exercise than people in less physically demanding occupations. Height and compliance with quadriceps exercises have a correlation coefficient of 3.05. Considering the positive relationship, taller people may be more likely than shorter people to compliant with the exercises. Weight and compliance with quadriceps strengthening activities have a 2.79 correlation coefficient. Regarding the positive relationship, it is possible that people who weight more will comply with the exercises more than those who weight less. The BMI and compliance with quadriceps strengthening exercises had a -2.16 correlation coefficient. This negative correlation raises the possibility that there is a slight trend encouraging exercise compliance in those with lower BMIs over those with higher BMIs.

#### 4.5 Regression Analysis

Regression analysis is a statistical technique used to analyze the relationship between the independent and dependent variables. In this analysis, we analyze the relationship between the Compliance with Quadriceps Strengthening Exercise as an independent variable and the impact on recovery as a dependent variable for a study participants following a ACL reconstruction surgery.

Table 4.12: Regression Analysis

Dependent Variable: Impact on Recovery	
Coefficient	1.567
Constant	12.897
<b>Compliance with Quadriceps Strengthening Exercise</b>	1.163
Significance Value	0.000
R-square	0.22
Adjusted R-square	0.24

The coefficient value of 1.567 means that the expected rise in the impact on recovery is 1.567 units for every unit increase in compliance with quadriceps strengthening exercises. This suggests that the exercises' compliance has a positive and statistically significant impact on recovery.

The expected impact on recovery when there is no compliance with quadriceps strengthening exercises is represented by the constant value of 12.897. In other words, the model predicts a 12.897 unit impact on recovery if a patient does not engage in any quadriceps strengthening exercises.

With a coefficient value of 1.163, compliance with quadriceps workouts appears to be important for the model's predictive power. This proves that following the workout regimen is a reliable indicator of how it will affect healing.

The degree of commitment to quadriceps strengthening exercises may account for 22% of the variation in the influence on recovery, as indicated by the values of R-square and modified R-square. This implies that other variables not included in the model may also have an impact on recovery.

The statistical significance of the relationship between the impact on recovery and the compliance with quadriceps exercises is indicated by the significance value of 0.000. This indicates that the observed relationship is probably a true relationship rather than the result of chance.

Overall, the model demonstrates a strong and statistically significant positive relationship between the impact on recovery after ACL reconstruction surgery and the level of compliance with quadriceps strengthening exercises. Patients who adhere to their quadriceps strengthening exercises on a regular basis will likely see faster improvements in their recovery than those who don't perform these exercises.

## CHAPTER 5

### DISCUSSION

Firstly, we checked the reliability of the study's questionnaire that showed in table 4.1 explore the strong internal consistency. This implies that the questionnaire assesses the investigated construct with reliability, offering a strong basis for further research. (Streiner & Norman, 2008) The gender distribution, marital status, employment status, level of education, height, and weight of the study participants were all diverse. Participants consistently reported continuous compliance to their prescribed quadriceps strengthening activities despite the variation in results.

The finding of the investigation that there were more female participants (60.0%) than male participants may have an impact on how people perceive pain. Frequency distribution table 4.1 for gender distribution have indicated that female prefer to express more pain intensity and sensitivity than men (Bartley & Fillingim, 2016). The variation could be explained by both psychosocial and biological factors, such as gender roles and cultural expectations, as well as biological aspects such as hormone changes and variations in pain processing pathways.

Females may be more susceptible than males to feel pain or discomfort during quadriceps strengthening exercises of ACL reconstruction rehabilitation, which could result in less compliance and a slower recovery. Additionally, the results of the study additionally indicate the possibility of gender-based variations in compliance to prescribed rehabilitation exercises. Exercise regimen adherence may be more difficult for women because of conflicting demands and duties, such as childcare, elder care, and housework. Females might also be less likely to exercise and more likely to give priority to social activities and appearance than to pressures from society, which could make it harder for them to compliance. The results of the study emphasize how important it is to take gender differences in pain perception, compliance, and time management into consideration when developing and putting into practice ACL reconstruction rehabilitation activities.

The study participants has a wide range of occupational statuses in which unemployed (17.8%) are students, and (22.2%) are retired. Table 4.2 finding suggest that unemployed and retired people

have more time to complete the exercises as compared to the employed and students. People with full-time employment or students may find it difficult to stick to their exercise routines because of their stressful schedules or academic commitments. They might not have as much time to work out and might feel stressed or exhausted, which would make it harder for them to stay motivated and consistently finish their workouts. (Pohjonen, 2001) Conversely, those who are retired or jobless might be able to organize their schedules more freely and have more time for exercise. They might, however, also lack regularity and structure, which could make it difficult to maintain committing to their physical fitness practice regularly.

Table 4.3 explores the marital status of the study that shows a sizable fraction of participants were married (37.8%) and single (37.8%) raises the possibility of variations in social support systems. It has been demonstrated that social support, especially from loved ones, has a major impact on health-related behavior and exercise regimen adherence (Vitaliano et al., 1985). Studies have repeatedly shown that adherence to exercise initiatives and married status have a positive association (Wen et al., 2012). The social support benefits that married people frequently receive from the other person are probably the cause of this relationship. The results of the study imply that marital status may in fact impact how likely a person is to stick to their exercise regimen because married people are more likely to do so because of their families/loved one support.

Graphical representation of the analysis indicates that the sample has a variety of educational backgrounds, demonstrated by its findings that 31.1% of participants held a bachelor's degree. Better abilities to solve problems have been associated to higher education levels, which may be helpful for understanding and completing rehabilitation activities (Haslam & Ownsworth, 2016). Higher levels of education could have something to do with an improved understanding of the significance that exercise plays in the recovery process. People with more education might be more likely to recognize the positive effects of regular physical activity for improved power, range of motion, pain management, and general function after ACL reconstruction. (Ceci & Rindermann, 2009)

We analyzed through the table 4.5 frequency values and the valid percentage of the height demographic variable that mostly participant lies in the Less than 5 feet and 6 feet 1 inch to 6 feet 5 inches (24.4%) in the height categories. This result indicates that the sample encompasses a wide range of body sizes, which is extremely important to take into consideration while formulating and

carrying out workout routines for the rehabilitation following ACL reconstruction. The participants' different heights highlight the significance it is to personalise training regimens to each person's unique anthropometric characteristics. People who are shorter in stature might need to adapt their training regimens to include smaller movement increments or change the height of the equipment. On the other hand, people who are taller might need to modify their workouts to account for their longer limbs and higher range of motion needs. (Wearing et al., 2006)

According to the study's results, the majority of participants have BMIs between people of normal weight (33.4%) and overweight (28.8%). This implies that a sizable fraction of the sample would experience more difficulties because of their weight status after ACL reconstruction rehabilitation. Because of additional pressure on their joints during rehabilitation exercises, overweight people may experience increased biomechanical stress. The increased levels of stress have the potential to cause pain, discomfort, and injury, which might prevent compliance to the exercise activities and eventually impact the results of rehabilitation (Vincent & Vincent, 2008).

The mean and standard deviation of the descriptive statistics for quadriceps strengthening exercises might give significant insight about participant adherence patterns as a whole. A high compliance mean value indicates that a majority of people followed their exercise programme consistently. A low standard deviation suggests that participant adherence levels were more consistent and that compliance levels were generally close to the mean. The average compliance with quadriceps strengthening exercises in this study is 4.3, with a 0.5 standard deviation. (Bordes et al., 2017) This suggests that, with little variation in compliance results, individuals usually reported high levels of adherence to their exercise activities. This result is consistent with the qualitative data, which indicates that the participants were motivated and dedicated to their recovery, and they understood the significance of strengthening activities for the quadriceps for a full recovery.

More than three research participants on average adhered to the recommended schedule of quadriceps strengthening activities, indicating a high degree of adherence. This high degree of compliance was associated with favourable outcomes like improved range of motion, reduced discomfort, improved overall quality of life, and a quicker return to pre-injury activities. These findings demonstrate how important it is to continue with quadriceps strengthening exercises in order to maximise healing following ACL surgery. It was shown that a number of important

variables, such as discomfort, incentive, time restraints, and support from medical experts, affected compliance. Addressing these hurdles is crucial to maximising positive outcomes, maintaining consistent adherence, and optimising rehabilitative activities (Sluijs et al., 1993).

The correlation value between compliance with quadriceps strengthening activities and the study participants' demographic data is displayed in Table 4.11. The study found a negative association between gender and compliance, with male participants being more consistent with the exercise routines than female participants. Numerous factors, such as gender-specific differences in motivation, social support, and pain perception, could account for this outcome. (Rokson et al. 2019) The results of the study indicated a positive correlation between age and compliance, indicating that older participants followed their exercise regimen more consistently than younger ones. This may be due to their increasing maturity, better understanding of the benefits of exercise for recovery, and less competing demands on their time. (Gamble et al., 2021).

The results show a positive correlation between education level and compliance, meaning that those with higher education levels were more likely to follow their physical wellness regimen. This outcome could be explained by increased health literacy, simpler resource accessibility, and increased awareness of the benefits of physical activity. Compliance was found to positively correlate with BMI, weight, and height. This implies that people who were taller, heavier, and had a higher BMI were more likely to stick to their exercise regimen. This may be the result of a number of things, including a higher perceived benefit-to-risk ratio, a deeper understanding of the value of exercise in managing weight, or increased drive to maintain physical fitness. (Paterno et al., 2007)

The results of the study emphasise how important it is to follow through on quadriceps strengthening activities in order to have a successful recovery after ACL surgery. A substantial and positive association between compliance and the impact on recovery was found using regression analysis. This indicates that the perceived impact on recovery improved along with an increase in compliance with quadriceps exercises. According to the regression model, the impact on recovery should rise by 1.567 units for every unit increase in compliance. This highlights the significant influence of adherence on successful rehabilitation outcomes and measures the strength of the connection. (Kraeutler et al., 2018) The results of the study highlight the significance compliance is in determining successful rehabilitation outcomes. Maintaining regular compliance

with quadriceps strengthening exercises is important for enhancing recovery, functional results, and general quality of life after ACL surgery.

## Conclusion

This study's result emphasizes the importance of demographic variables in determining the level that patient's compliance to quadriceps strengthening activities during the recovery process following ACL surgical procedures. A thorough investigation is made possible by the study's questionnaire's strong reliability. Variations based on gender highlight potential obstacles for female participants and highlight the importance of including biological and psychological factors into rehabilitation strategies. The factors of occupation, marital status, and level of education, height, and weight add complexities. Significant discoveries include the fact that unemployed and retired people exhibit greater levels of compliance, while married participants benefit from social support. Compliance and level of education are strongly correlated, indicating increased comprehension and participation in rehabilitation activities. Personalized training plans are necessary due to variations in height. Problems related to weight and BMI highlight the need of satisfying individual needs. Nevertheless, these challenges, the study finds that participants are generally motivated, as evidenced by high compliance means and favorable results.

Complex relationships, such as the gender-compliance distinction and positive correlations with age, education, BMI, weight, and height, are shown by correlation studies. Regression analysis highlights compliance's crucial influence on successful rehabilitation outcomes by emphasizing its pivotal role in predicting the perceived impact on recovery. Essentially, this study sheds light on the complex interactions that exist between exercise compliance and demographics, providing important information for modifying rehabilitation therapies. After ACL surgery, it becomes essential to identify and treat these aspects in order to maximize rehabilitation, functional outcomes, and overall quality of life. The study offers an in-depth understanding of the complex processes that occur in the recovery process, laying the foundation for future research initiatives.



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