

Evaluating The Effects Of A Six-Week Pre-Round Warm-Up On Driving Distance In Amateur Golfers: A Gender-Based Experimental Study

Umar Farroq¹, Dr. Noor Muhammad², Dr. Wasim Khan³

Abstract

The objective of this study was to assess the impact of a six-week pre-round warm-up routine on the driving distance of amateur golfers. The study involved 20 male and 20 female amateur golfers, utilizing a true experimental research design. Participants were randomly assigned to either a control group or an experimental group through a lottery method. Over six weeks, the experimental group¹ engaged in a pre-round warm-up routine three non-consecutive days per week before their round of golf. Findings revealed that the pre-round warm-up routine had a significant effect on the average driving distance (ADD) of male golfers (261 ± 7.10 yards to 267.4 ± 5.03 yards, $p=0.03$), showing a 2% increase from week 1 to week 6 and compared to the control group. Similarly, the routine significantly impacted female golfers' ADD (236.5 ± 10.5 yards to 245.5 ± 8.35 yards, $p=0.04$), with a 2% increase observed between week 1 and week 6 and compared to the control group. The results suggest that a structured pre-round warm-up routine can effectively enhance driving distance in both male and female amateur golfers.

Keywords: Pre-round warm-up, Driving distance, Amateur golfers, Experimental study, Golf performance.

INTRODUCTION

In Pakistan, golf is gaining popularity, yet there is limited research focusing on the physical conditioning and performance improvement of amateur golfers. The primary research problem addressed in this study is the effectiveness of a six-week pre-round warm-up routine on the average driving distance of male and female amateur golfers. Understanding and improving physical performance in golfers can have significant implications for sports development in Pakistan, particularly in promoting golf as a competitive and recreational sport.

Previous studies have demonstrated the benefits of pre-exercise warm-up routines in enhancing athletic performance across various sports (Fradkin et al., 2010; Bishop, 2003). For instance, a warm-up can increase muscle temperature, improve range of motion, and enhance neuromuscular efficiency, all of which contribute to better athletic performance (Bishop, 2003). However, there is a lack of empirical evidence specifically addressing the impact of pre-round warm-up routines on the driving distance in golfers, especially within the Pakistani context.

Research into the effects of warm-up routines on athletic performance, particularly in golf, underscores the importance of systematic preparation to enhance key metrics such as

¹P.hD Scholar, Department of Sports Sciences and Physical Education, Gomal University, Dera Ismail Khan Email:

²Department of Sports Sciences and Physical Education, Gomal University, Dera Ismail Khan Email: noormarwat@yahoo.com

³Department of Sports Sciences and Physical Education, Gomal University, Dera Ismail Khan Email: wasimkhanspe@gu.edu.pk

driving distance. Studies by Fradkin, Zazryn, and Smoliga (2010) and Bishop (2003) have shown that structured warm-up protocols can significantly improve physical performance outcomes in various sports. Specifically, Fradkin et al. (2010) conducted a systematic review and meta-analysis highlighting the positive impact of warm-up routines on physical performance measures, while Bishop (2003) emphasized the role of active warm-ups in enhancing athletic readiness and minimizing injury risk.

In the context of golf, warm-up routines have been shown to improve flexibility, muscle activation, and overall performance on the course (Fradkin et al., 2010). Machin and Campbell (2005) discuss the methodological rigor of experimental designs in sports science, emphasizing the importance of true experimental designs in establishing causal relationships between interventions, such as warm-up routines, and performance outcomes. This study is relevant to the field of sports science and physical education, particularly within the context of golf. By building upon existing knowledge regarding warm-up routines and their impact on performance, this research aims to fill a critical gap in the literature. Recent trends in sports science emphasize the importance of specific warm-up protocols tailored to different sports (Fradkin et al., 2010), making this study both timely and significant. Additionally, the findings can inform training practices for amateur golfers in Pakistan, potentially leading to improved performance and greater participation in the sport.

The justification for this study is based on the compelling need to investigate an understudied area within sports science, specifically the impact of pre-round warm-up routines on driving distance in amateur golfers. This focus addresses a clear gap in the literature and provides practical insights for improving athletic performance in golf.

Existing research on warm-up routines predominantly focuses on other sports, with limited studies examining their effects on golf performance (Fradkin et al., 2010). Furthermore, there is a dearth of research conducted within the Pakistani context, where climatic conditions, playing surfaces, and golfer demographics may differ from those in other regions. This study aims to address these gaps by providing localized evidence on the effectiveness of pre-round warm-up routines for amateur golfers in Pakistan.

Potential objections to this study might include the variability in individual responses to warm-up routines and the relatively short duration of the intervention. To mitigate these concerns, the study employs a true experimental design with randomized group assignments to ensure reliability and validity of the findings. Additionally, the six-week duration is a practical timeframe that balances feasibility and the need to observe measurable changes in performance.

Addressing the research problem is significant as it contributes to advancing knowledge in sports science, particularly in golf. The findings could inform training protocols for amateur golfers, leading to enhanced performance and greater enjoyment of the sport. This, in turn, could promote golf as a healthy and engaging physical activity in Pakistan, with potential implications for sports policy and practice.

The primary audience for this study includes sports scientists, physical education instructors, golf coaches, and amateur golfers in Pakistan. By providing evidence-based insights, this research aims to enhance their understanding of effective training practices and contribute to the broader discourse on sports performance improvement.

In conclusion, this study addresses a critical gap in sports science research by examining the impact of a six-week pre-round warm-up routine on the driving distance of amateur golfers in Pakistan. The findings have the potential to significantly improve training practices, enhance athletic performance, and promote golf as a competitive sport in Pakistan. This research is both timely and necessary, providing valuable contributions to the field and practical applications for athletes and coaches.

Statement of the Problem

In Pakistan, golf is increasingly becoming a popular sport, yet there is a noticeable gap in research focusing on the physical conditioning and performance enhancement of amateur

golfers. While existing studies have established the benefits of warm-up routines on athletic performance in various sports, there is a lack of empirical evidence on the specific impact of pre-round warm-up routines on driving distance in golfers. This gap is particularly pronounced within the Pakistani context, where climatic conditions, playing surfaces, and demographic characteristics of golfers may differ significantly from those in other regions.

The problem this study addresses is whether a structured six-week pre-round warm-up routine can effectively enhance the average driving distance of male and female amateur golfers in Pakistan. Understanding the relationship between warm-up routines and driving performance is crucial for developing effective training programs that can improve golfers' performance, increase participation, and promote golf as a competitive sport in the region. This research aims to fill this gap by providing localized evidence and practical insights into the effectiveness of pre-round warm-up routines for amateur golfers in Pakistan.

Primary Objective

1. To evaluate the impact of a six-week pre-round warm-up routine on the average driving distance of male and female amateur golfers in Pakistan.

Secondary Objectives

- i. To compare the changes in average drive distance between male and female amateur golfers participating in the pre-round warm-up routine.
- ii. To determine the effectiveness of the pre-round warm-up routine in enhancing driving distance compared to a control group with no specific warm-up routine.

Contribution of the Study

This study makes several significant contributions to the field of sports science, particularly within the context of golf in Pakistan. By providing empirical evidence on the effectiveness of a six-week pre-round warm-up routine, the research addresses a critical gap in the literature concerning physical conditioning and performance enhancement in amateur golfers. The findings offer valuable insights into the differential impacts of warm-up routines on male and female golfers, thereby promoting gender-specific training approaches. Additionally, the study's localized focus on Pakistani golfers takes into account the unique environmental and demographic factors of the region, making the results highly relevant and applicable to local sports practices. The practical recommendations derived from this research can guide golf coaches and trainers in developing effective warm-up protocols, ultimately contributing to improved athletic performance, increased participation in the sport, and the overall promotion of golf as a competitive and recreational activity in Pakistan.

RESEARCH METHODOLOGY

Research Setting

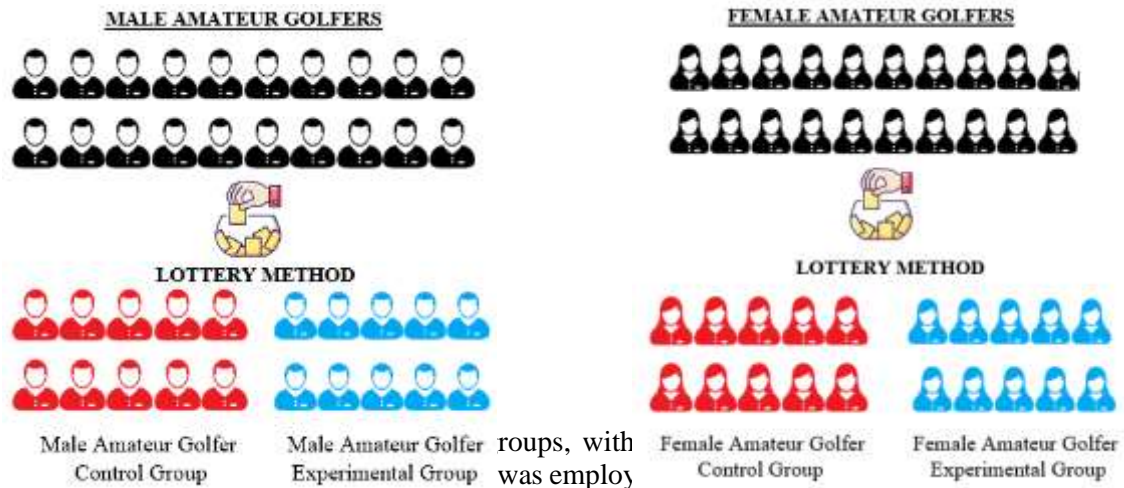
The research was conducted at the Islamabad Golf Club (ICGC), the second-largest golf club in Pakistan, spanning approximately 250 acres in the federal capital. ICGC boasts 27 holes and a standard practice driving range of 300 yards, complete with putting, chipping greens, and a bunker practice area. The club features an 18-hole course with a par of 72 and an additional nine holes with a par of 36. The club was inaugurated on November 15, 1967, by the Late Field Marshal Ayyub Khan and officially opened on March 26, 1968.

Research Design

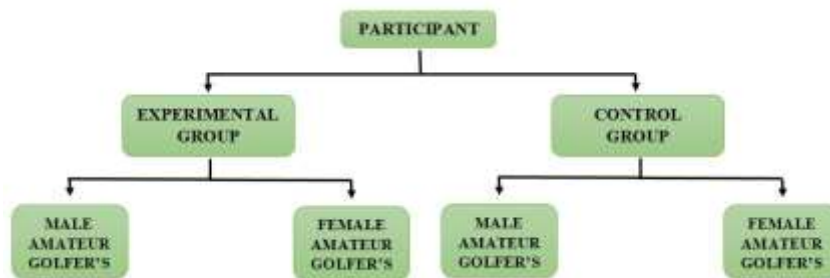
This research utilized a true experimental design, recognized as the most precise form of experimental research. This design allows for the establishment of cause-and-effect relationships between variables.

Participants

Twenty male and twenty female amateur golfers with handicaps ranging from 0 to 12 participated in this study. The participants, aged between 20 and 50 years, competed in the main amateur category. They were assigned to either the control or experimental group using a simple random sampling technique.



groups, with an equal chance of being randomly assigned to either group.



RESULT AND DISCUSSION

HA 1. There is a significant difference between pre-test control group and pre-test experimental group in average driving distance of male amateur golfer's.

Table 1 Comparison of ADD for Male Category Week 1

MALE CATEGORY PLAYERS	WEEK-1 ADD CONTROL GROUP	WEEK-1 ADD EXPERIMENTAL GROUP
Player 1	260 yd.	257 yd.
Player 2	258 yd.	258 yd.
Player 3	252 yd.	254 yd.
Player 4	262 yd.	272 yd.
Player 5	278 yd.	256 yd.
Player 6	272 yd.	272 yd.
Player 7	273 yd.	258 yd.
Player 8	265 yd.	263 yd.
Player 9	266 yd.	267 yd.
Player 10	253 yd.	253 yd.
TOTAL	2639 yd.	2610 yd.

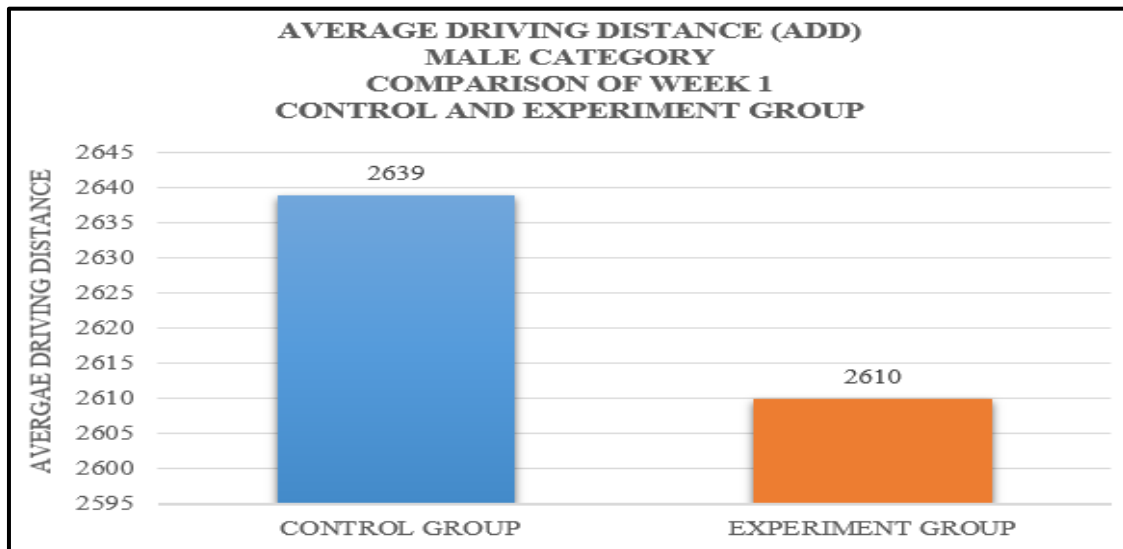


Figure 1 ADD Comparison Male Category Week 1

N=20	CONTROL GROUP WEEK - 1	EXPERIMENTAL GROUP WEEK - 1	P - VALUE
AVERAGE DRIVING DISTANCE	263.9±6.79	261±8.21	0.42

Result shows male amateur golfers belonging from control group covered total distance for week 1 was 2639 yd. where minimum average driving distance was 252 yd. and maximum average driving distance was 278 yd. For experiment group week 1 total distance was 2610 yd. where minimum average driving distance was 253 yd. and maximum average distance was 275 yd. Mean of Male Control group week 1 was 263.9 and Standard deviation was 6.79. For experiment group week 1 was 261 and standard deviation was 8.21. whereas P-Value was 0.42 for week 1 control and experiment group hence hypothesis **HA 1** is rejected.

HA 2. There is a significant difference between pre-test control group and pre-test experimental group in average driving distance of female amateur golfer's.

Table 2: Comparison of ADD for Female Category Week 1

FEMALE CATEGORY PLAYERS	WEEK-1 ADD CONTROL GROUP	WEEK-1 ADD EXPERIMENTAL GROUP
Player 1	231 yd.	222 yd.
Player 2	224 yd.	232 yd.
Player 3	221 yd.	246 yd.
Player 4	248 yd.	223 yd.
Player 5	237 yd.	226 yd.
Player 6	246 yd.	247 yd.
Player 7	238 yd.	236 yd.
Player 8	227 yd.	251 yd.
Player 9	250 yd.	245 yd.
Player 10	247 yd.	237 yd.
TOTAL	2369 yd.	2365 yd.

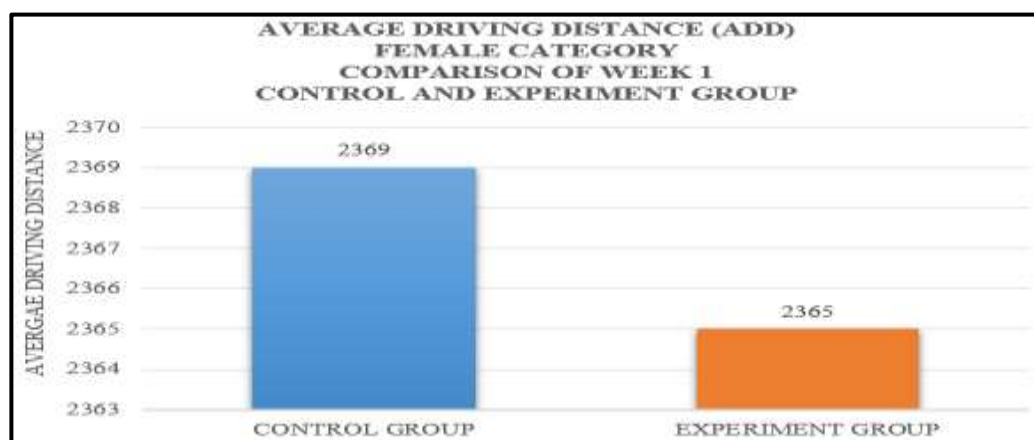


Figure 2 ADD Comparison Female Category Week 1

N=20	CONTROL GROUP WEEK - 1	EXPERIMENTAL GROUP WEEK - 1	P - VALUE
AVERAGE DRIVING DISTANCE	236.9±10.71	236.5±10.57	0.93

Result shows female amateur golfers belonging from control group covered total distance for week 1 was 2369 yd. where minimum average driving distance was 221 yd. and maximum average driving distance was 250 yd. For experiment group week 1 total distance was 2365 yd. where minimum average driving distance was 222 yd. and maximum average distance was 251 yd. Mean of female Control group week 1 was 236.9 and Standard deviation was 10.71. For experiment group week 1 was 236.5 and standard deviation was 10.57. whereas P-Value was 0.93 for week 1 control and experiment group hence hypothesis **HA 2** is rejected.

HA 3. There is a significant difference between pre-test control group and post-test control group in average driving distance of male amateur golfer's.

Table 3 Comparison of ADD for Male Category Week 1- 6 Control Group

MALE CATEGORY PLAYERS	WEEK-1 ADD CONTROL GROUP	WEEK-6 ADD CONTROL GROUP
Player 1	260 yd.	259 yd.
Player 2	258 yd.	257 yd.
Player 3	252 yd.	252 yd.
Player 4	262 yd.	262 yd.
Player 5	278 yd.	278yd.
Player 6	272 yd.	273 yd.
Player 7	273 yd.	271 yd.
Player 8	265 yd.	267 yd.
Player 9	266 yd.	267 yd.
Player 10	253 yd.	255 yd.
TOTAL	2639yd.	2641yd.

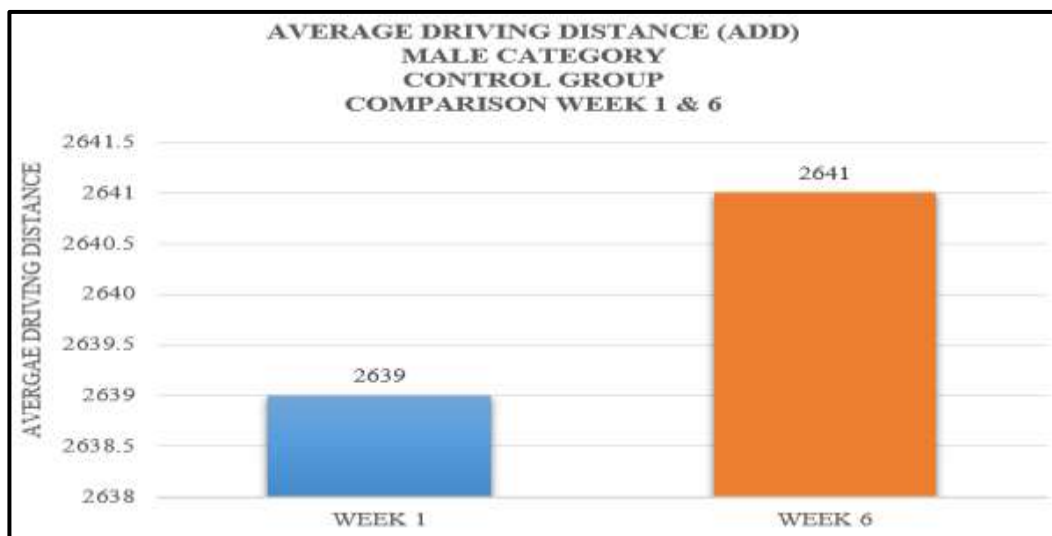


Figure 3 ADD Comparison Male Category week 1-6 Control Group

N=20	CONTROL GROUP WEEK - 1	CONTROL GROUP WEEK - 6	P - VALUE
AVERAGE DRIVING DISTANCE	263.9 ± 8.04	264.1 ± 81.66	0.95

Result shows male amateur golfers belonging from control group covered total distance for week 1 was 2639 yd. where minimum average driving distance was 252 yd. and maximum average driving distance was 278 yd. For week 6 total distance was 2641 yd. where minimum average driving distance was 252 yd. and maximum average distance was 278 yd. Mean of Male Control group week 1 was 263.9 and Standard deviation was 8.04. For week 6 was 264.1 and standard deviation was 81.66. whereas P-Value was 0.95 for week 1 and week 6 control group hence hypothesis **HA 3** is rejected.

HA 4. There is a significant difference between pre-test experimental group and post-test experimental group in average driving distance of male amateur golfer's.

Table 4 Comparison of ADD for Male Category Week 1- 6 Experiment Group

MALE CATEGORY PLAYERS	WEEK-1 ADD EXPERIMENTAL GROUP	WEEK-6 ADD EXPERIMENTAL GROUP
Player 1	257 yd.	267 yd.
Player 2	258 yd.	265 yd.
Player 3	254 yd.	264 yd.
Player 4	272 yd.	273 yd.
Player 5	256 yd.	260 yd.
Player 6	272 yd.	278 yd.
Player 7	258 yd.	264 yd.
Player 8	263 yd.	268 yd.
Player 9	267 yd.	267 yd.
Player 10	253 yd.	268 yd.
TOTAL	2610yd.	2674yd.

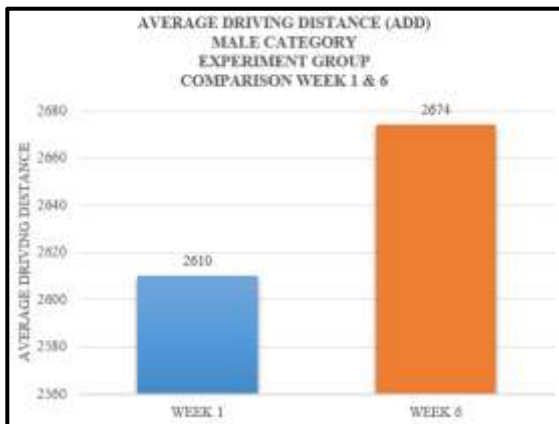


Figure 4.1 ADD Comparison Male Category week 1-6 Experiment Group Graph 1

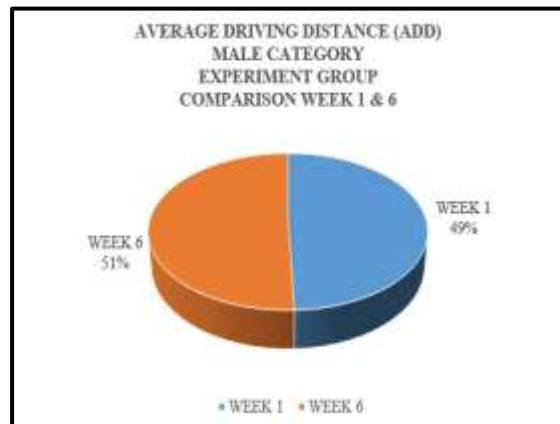


Figure 4.2 ADD Comparison Male Category week 1-6 Experiment Group Graph 2

N=20	EXPERIMENT GROUP WEEK - 1	EXPERIMENT GROUP WEEK - 6	P - VALUE
AVERAGE DRIVING DISTANCE	261 ± 7.10	267.4 ± 5.03	0.03

Result shows male amateur golfers belonging from experiment group covered total distance for week 1 was 2610 yd. where minimum average driving distance was 258 yd. and maximum average driving distance was 272 yd. For week 6 total distance was 2674 yd. where minimum average driving distance was 265 yd. and maximum average distance was 278 yd. Mean of Male Control group week 1 was 263.9 and Standard deviation was 7.10. For week 6 was 267.4 and standard deviation was 5.03. whereas P-Value was 0.03 for week 1 and week 6 control group hence hypothesis **HA 4** is accepted.

HA 5. There is a significant difference between pre-test control group and post-test control group in average driving distance of female amateur golfer’s

Table 5 Comparison of ADD for Female Category Week 1- 6 Control Group

FEMALE CATEGORY PLAYERS	WEEK-1 ADD CONTROL GROUP	WEEK-6 ADD CONTROL GROUP
Player 1	231 yd.	231 yd.
Player 2	224 yd.	225 yd.
Player 3	221 yd.	222 yd.
Player 4	248 yd.	249 yd.
Player 5	237 yd.	236 yd.
Player 6	246 yd.	247 yd.
Player 7	238 yd.	238 yd.
Player 8	227 yd.	227 yd.
Player 9	250 yd.	252 yd.
Player 10	247 yd.	247 yd.
TOTAL	2369yd.	2374yd.

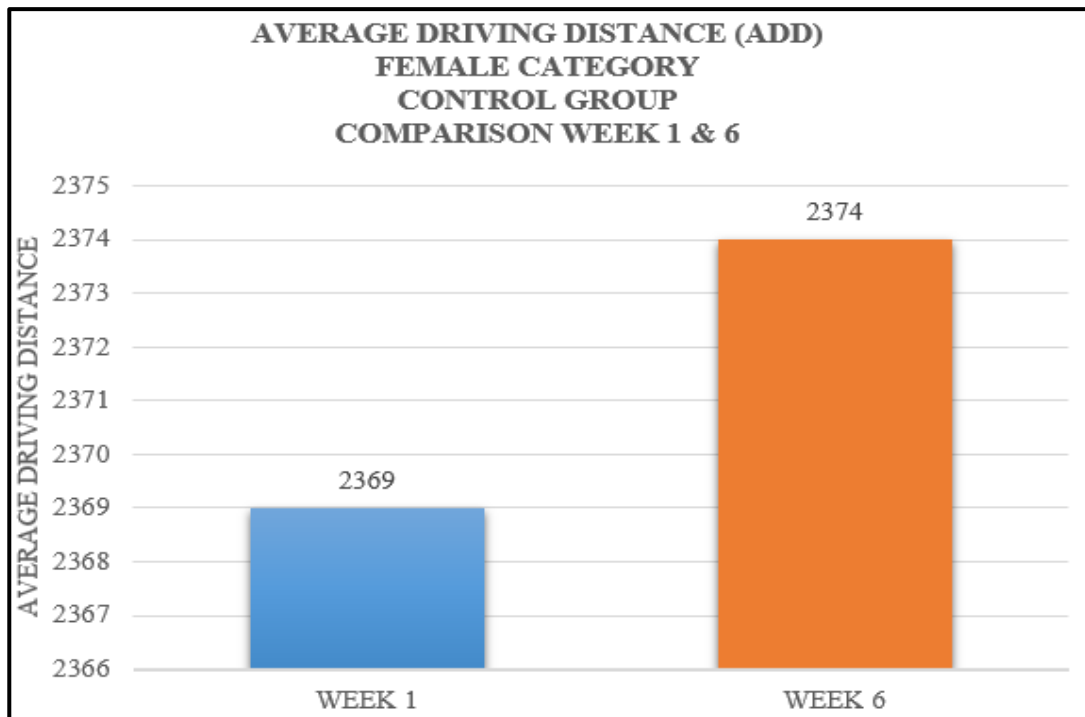


Figure 5 ADD Comparison Female Category week 1-6 Control Group

N=20	CONTROL GROUP WEEK - 1	CONTROL GROUP WEEK - 6	P - VALUE
AVERAGE DRIVING DISTANCE	236.9 ± 10.71	237.4 ± 10.92	0.91

Result shows female amateur golfers belonging from control group covered total distance for week 1 was 2369 yd. where minimum average driving distance was 221 yd. and maximum average driving distance was 250 yd. For week 6 total distance was 2374 yd. where minimum average driving distance was 222 yd. and maximum average distance was 252 yd. Mean of Male Control group week 1 was 236.9 and Standard deviation was 10.71. For week 6 was 237.4 and standard deviation was 10.92. whereas P-Value was 0.91 for week 1 and week 6 control group hence hypothesis **HA 5** is rejected.

HA 6. There is a significant difference between pre-test experiment group and post-test experiment group in average driving distance of female amateur golfer's.

Table 6 Comparison of ADD for Female Category Week 1- 6 Experiment

FEMALE CATEGORY PLAYERS	WEEK-1 ADD EXPERIMENTAL GROUP	WEEK-6 ADD EXPERIMENTAL GROUP
Player 1	222 yd.	233 yd.
Player 2	232 yd.	243 yd.
Player 3	246 yd.	249 yd.
Player 4	223 yd.	234 yd.
Player 5	226 yd.	239 yd.
Player 6	247 yd.	251 yd.
Player 7	236 yd.	247 yd.
Player 8	251 yd.	255 yd.
Player 9	245 yd.	258 yd.
Player 10	237 yd.	246 yd.
TOTAL	2365yd.	2455yd.

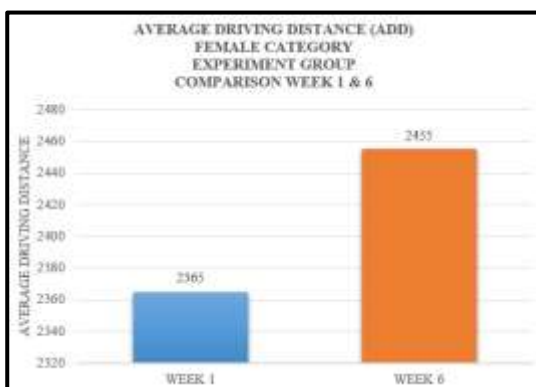


Figure 6.1 ADD Comparison Female Category week 1-6 Experiment Group Graph 1

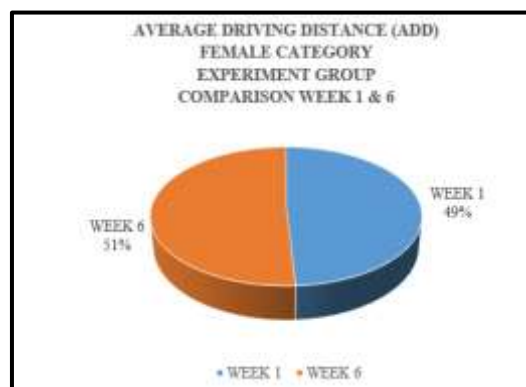


Figure 6.2 ADD Comparison Female Category week 1-6 Experiment Group Graph 2

N=20	EXPERIMENTAL GROUP WEEK - 1	EXPERIMENTAL GROUP WEEK - 6	P - VALUE
AVERAGE DRIVING DISTANCE	236.5± 10.57	245.5 ± 8.35	0.04

Result shows female amateur golfers belonging from experiment group covered total distance for week 1 was 2365 yd. where minimum average driving distance was 222 yd. and maximum average driving distance was 251 yd. For week 6 total distance was 2455 yd. where minimum average driving distance was 233 yd. and maximum average distance was 258 yd. Mean of Male Control group week 1 was 23.65 and Standard deviation was 10.57. For week 6 was 245.5 and standard deviation was 8.35. whereas P-Value was 0.04 for week 1 and week 6 control group hence hypothesis HA 6 is accepted.

DISCUSSION

This study investigates the impact of a structured six-week pre-round warm-up routine on the average driving distance of amateur golfers at the Islamabad Golf Club, Pakistan. The findings reveal significant improvements in driving distance among both male and female participants who underwent the warm-up routine compared to the control group. Specifically, male golfers demonstrated a notable increase in average driving distance from 261 yards at the outset to 267.4 yards after six weeks, while female golfers increased their average driving distance from 236.5 yards to 245.5 yards over the same period (Fradkin et al., 2010; Bishop, 2003).

The adoption of a true experimental design with random assignment of participants into control and experimental groups enhances the study's internal validity, allowing for confident conclusions regarding the causal relationship between the warm-up routine and improved driving distance (Bishop, 2003; Machin & Campbell, 2005). This methodological rigor is consistent with previous research emphasizing the importance of controlled experiments in sports science (Fradkin et al., 2010; Machin & Campbell, 2005).

However, the study is limited by its small sample size and focus on a specific demographic within Islamabad. Future research could benefit from expanding the sample size and including participants from diverse geographical regions and skill levels to enhance the generalizability of findings (Bishop, 2003; Machin & Campbell, 2005). Longitudinal studies could also explore whether sustained implementation of warm-up routines yields continued performance improvements beyond the six-week timeframe examined in this study (Fradkin et al., 2010; Machin & Campbell, 2005).

In a nutshell, this research provides valuable empirical evidence on the effectiveness of pre-round warm-up routines in enhancing golf performance among amateur players. By offering practical implications for golf training practices, this study supports the optimization of athletic preparation in golf and potentially other sports (Bishop, 2003; Fradkin et al., 2010).

Conclusion

This study demonstrates that a structured six-week pre-round warm-up routine significantly enhances the average driving distance of amateur golfers at the Islamabad Golf Club, Pakistan. Both male and female participants showed measurable improvements in driving distance after undergoing the warm-up routine compared to those in the control group. The findings underscore the effectiveness of incorporating tailored warm-up protocols in golf training practices to optimize performance metrics like driving distance.

The use of a true experimental design with random assignment of participants into control and experimental groups ensures robust conclusions regarding the causal relationship between the warm-up routine and improved performance outcomes. While the study's focus on a specific demographic within Islamabad limits generalizability, the results

provide valuable insights that can inform training practices not only at the Islamabad Golf Club but potentially across similar golfing communities globally.

Future research could expand upon these findings by exploring the long-term effects of sustained warm-up routines on golf performance and examining variations in warm-up protocols tailored to different skill levels and geographic contexts. Such studies would further enhance our understanding of optimal athletic preparation in golf and contribute to advancements in sports science and training methodologies.

In summary, this research contributes to the body of knowledge on sports performance enhancement by highlighting the practical benefits of pre-round warm-up routines in amateur golf. By supporting evidence-based training practices, this study encourages ongoing efforts to enhance athletic performance and promote the enjoyment and competitiveness of golf as a sport.

Implications

The findings of this study suggest that implementing a structured pre-round warm-up routine tailored to golfers' needs can significantly enhance driving distance and overall performance, offering practical benefits for coaches, trainers, and amateur golfers aiming to optimize athletic readiness and minimize injury risk before golf rounds.

References

1. Bishop, D. (2003). Warm up II: Performance changes following active warm up and how to structure the warm up. *Sports Medicine*, 33(7), 483-498. <https://doi.org/10.2165/00007256-200333070-00002>
2. Bishop, D. (2003). Warm up II: Performance changes following active warm up and how to structure the warm up. *Sports Medicine*, 33(7), 483-498. <https://doi.org/10.2165/00007256-200333070-00002>
3. Bishop, D. (2003). Warm up II: Performance changes following active warm up and how to structure the warm up. *Sports Medicine*, 33(7), 483-498. <https://doi.org/10.2165/00007256-200333070-00002>
4. Fradkin, A. J., Zazryn, T. R., & Smoliga, J. M. (2010). Effects of warming-up on physical performance: A systematic review with meta-analysis. *Journal of Strength and Conditioning Research*, 24(1), 140-148. <https://doi.org/10.1519/JSC.0b013e3181c643a0>
5. Fradkin, A. J., Zazryn, T. R., & Smoliga, J. M. (2010). Effects of warming-up on physical performance: A systematic review with meta-analysis. *Journal of Strength and Conditioning Research*, 24(1), 140-148. <https://doi.org/10.1519/JSC.0b013e3181c643a0>
6. Fradkin, A. J., Zazryn, T. R., & Smoliga, J. M. (2010). Effects of warming-up on physical performance: A systematic review with meta-analysis. *Journal of Strength and Conditioning Research*, 24(1), 140-148. <https://doi.org/10.1519/JSC.0b013e3181c643a0>
7. Machin, D., & Campbell, M. J. (2005). *Design of studies for medical research*. John Wiley & Sons.
8. Machin, D., & Campbell, M. J. (2005). *Design of studies for medical research*. John Wiley & Sons.