

Awareness of Warm-Up and Cooldown in Gym Trainers: A Survey Study

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Abstract

Background: Warm-up and cool-down exercises are essential components of physical training that help improve exercise performance, reduce the risk of injuries, and promote post-exercise recovery. Gym trainers play a vital role in educating and guiding individuals about safe exercise practices. Therefore, assessing their awareness and practice of warm-up and cool-down exercises is important for ensuring safe and effective fitness training.

Aim & Objective: The aim of this study was to assess the awareness of warm-up and cool-down exercises among gym trainers. The objectives were to determine gym trainer's knowledge regarding the benefits and importance of warm-up and cool-down activities.

Method: This was a survey study in which a total of 115 gym trainers participated. The data were collected through an online questionnaire, which was distributed among eligible gym trainers.

Result: A total of 115 gym trainers participated in the study (mean age: 26.68 ± 3.86 years). Most participants demonstrated good awareness of both warm-up (76.5%) and cool-down exercises. About 70.4% always performed warm-up exercises, while 69.6% always performed cool-down exercises. More than half of the trainers spent 5–10 minutes on both warm-up (51.3%) and cool-down (53.0%) activities. Additionally, 99.1% believed that warm-up improves exercise performance, and 76.5% considered cool-down exercises highly important. These findings indicate good awareness and regular practice of warm-up and cool-down exercises among gym trainers.

Conclusion: In conclusion, gym trainers have good awareness and positive practices regarding warm-up and cool-down exercises but cool-down exercises were perceived as less important than warm-up exercises by some participants.

Keywords: Warm-up, Cool-down, Gym Trainers, Awareness, Injury Prevention, Exercise Performance, Exercise Recovery.

1. Introduction

Physical activity is widely acknowledged as a vital component of a healthy lifestyle and plays a crucial role in maintaining physical, mental, and social well-being. It is defined as any bodily movement produced by skeletal muscles that results in energy expenditure above resting levels. Regular participation in physical activity provides numerous health benefits, including improved cardiovascular and musculoskeletal health, better weight management, enhanced mental well-being, and a reduced risk of chronic diseases such as obesity, hypertension, diabetes mellitus, and cardiovascular disease. Exercise is a subset

of physical activity that is planned, structured, repetitive, and purposeful, with the objective of improving or maintaining physical fitness and overall health. ^[1,2]

Regular exercise not only improves physical fitness but also contributes to long-term health benefits, functional independence, and improved quality of life across different age groups. ^[2,3] Current guidelines recommend that adults participate regularly in aerobic and muscle-strengthening activities to achieve optimal health outcomes. ^[2]

In recent years, participation in gym-based fitness programs has increased substantially due to growing awareness regarding health, body composition, physical appearance, and athletic performance. Resistance training has become one of the most commonly practiced forms of exercise in fitness centers and gyms. It is effective in improving muscular strength, muscular endurance, body composition, bone health, and functional performance. According to the National Strength and Conditioning Association (NSCA), a properly designed exercise session should include a warm-up phase, conditioning phase, and cool-down phase to optimize performance and ensure safety. ^[4]

WARM UP PERIOD

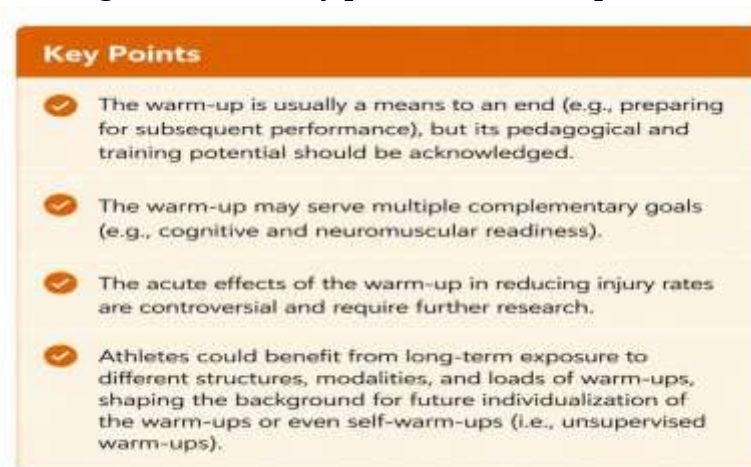
Physiologically, there is a delay between the start of an activity and the changes the body needs to make in order to meet its needs. Enhancing the various adaptations that must be made before to physical exercise is the goal of the warm-up. ^[15] Warm-up is a series of preparatory activities performed before engaging in physical exercise. The term "warm-up" implies an increase in body temperature. As the body of knowledge expanded, the field became filled with terms such as prior or pre-exercise, pre-activation, post-activation potentiating (PAP), post-activation performance enhancement (PAPE), and distinctions between active and passive warm-up. The main goal of a warm-up is to get athletes ready physically and mentally for upcoming training or competition by raising body temperature, boosting neuromuscular readiness, sharpening focus, and enabling sport-specific preparation. Although warm-ups are commonly thought to reduce injury risk, there is not enough evidence to definitively prove their immediate injury-prevention benefits. ^[5]

It generally consists of low-to-moderate intensity aerobic activities, mobility exercises, dynamic stretching, and movement-specific drills designed to prepare the body for physical exertion. The primary purpose of warm-up is to gradually prepare the cardiovascular, neuromuscular, and musculoskeletal systems for the demands of exercise. ^[6]

PHYSIOLOGICAL RESPONSES:

- A rise in the temperature of muscles. By decreasing muscle viscosity and speeding up nerve conduction, the higher temperature improves the effectiveness of muscle contraction.
- Increased circulation causes the previously constricted capillaries to dilate, improving oxygen delivery to the working muscles and reducing oxygen deficiency and lactic acid production.
- The neural respiratory center's sensitivity to different exercise stimuli has changed.
- A rise in the return of blood. This happens as blood flow moves from the periphery to the center. ^[15]

Figure 1: some key points for warm-up ^[5]



Classification of Warm- Up:

Warm-up can be classified into several types based on its purpose and method of application. Each type contributes to preparing the body for exercise and may be used individually or in combination depending on the nature of the activity being performed. ^[8]

1. General Warm-Up

Mobility drills; jogging, skipping, and light dynamic stretching are all part of a general warm-up. Its main goals are to increase blood flow, gradually raise body temperature, and prepare the body physiologically for physical activity. These exercises provide a broad foundation for physical readiness even though they are not specifically designed to meet the demands of sports. Low-intensity activities such as brisk walking, light jogging, cycling, and skipping progressively elevate body temperature, blood circulation, heart rate, and respiratory rate. The primary aim is to prepare the musculoskeletal and cardiovascular systems for upcoming physical exertion. Enhanced blood flow and increased muscle temperature improve physiological readiness and reduce the risk of injury. ^[5, 8, 9]

2. Sport-Specific Warm-Up

A specific warm-up consists of exercises that closely replicate the movements performed during the main workout to engage the muscles, joints, and movement patterns essential for the upcoming activity. This may include sport-specific drills before competition or light-weight repetitions before strength training. These warm-ups enhance neuromuscular coordination, movement efficiency, and overall performance. ^[5, 4, 8]

3. Active warm-up

Active warm-ups involve physical movements performed to raise muscle temperature and enhance physiological readiness. Common activities include aerobic exercise, mobility drills, and dynamic stretching. This method is considered highly effective because it simultaneously increases blood flow, oxygen delivery, muscle temperature, and neuromuscular activation. ^[8]

4. Passive warm-up

Passive warm-up refers to techniques that raise body or muscle temperature without significant physical exertion. Examples include hot showers, heating pads, massage, warm clothing, and exposure to warm environments. Although passive warm-up can increase muscle temperature and flexibility, it does not adequately stimulate the cardiovascular and neuromuscular systems. Therefore, it is generally recommended to use passive warm-up as a supplement to, rather than a replacement for, active warm-up. ^[8]

Static and dynamic stretching is also commonly incorporated into warm-up routines. Dynamic warm-up involves controlled movements such as lunges, squats, arm swings, leg swings, and mobility drills performed through functional ranges of motion. Research suggests that dynamic warm-up improves muscular power, agility, flexibility, and overall exercise performance more effectively than prolonged static stretching before exercise.^[8-10] Consequently, dynamic warm-up is generally preferred before exercise, whereas static stretching is often reserved for cool-down sessions or dedicated flexibility training.^[10] Warm-up also plays a significant role in injury prevention. Muscles, tendons, ligaments, and joints endure considerable stress during exercise, and inadequate preparation may increase the risk of strains, sprains, and musculoskeletal injuries.^[9] Structured warm-up improves exercise performance and may reduce injury risk by facilitating optimal physiological functioning and readiness for activity.^[10] Warm-up also provides psychological benefits, allowing mental preparation through improved concentration, motivation, confidence, and focus. Both athletes and recreational exercisers report enhanced readiness and performance following warm-up routines. Psychological preparedness is a key factor influencing exercise effectiveness and training quality.^[11]

COOL DOWN PERIOD

Cool-down, typically performed after exercise, involves low-intensity activities such as slow walking, light jogging, breathing exercises, and stretching. It helps the body gradually return to resting physiological conditions, maintaining venous return, lowering heart rate, and supporting cardiovascular recovery. Abruptly stopping exercise may cause blood pooling, dizziness, and delayed recovery. Research indicates cool-down assists in cardiovascular recovery, reduces post-exercise discomfort, maintains circulation, and promotes psychological relaxation, though some outcomes remain inconsistent. Despite this, cool-down is widely recommended as part of a comprehensive exercise program for recovery and overall exercise experience.^[13]

After exercise, recovery interventions are frequently used to improve recovery, boost future performance, and reduce injury risk. One of the most commonly used methods is the active cool-down, which typically involves 5–15 minutes of low- to moderate-intensity activity performed within an hour after training or competition. Surveys of athletes, coaches, and athletic trainers show that active cool-downs are widely recommended and regularly included in post-exercise routines.^[13]

PHYSIOLOGICAL RESPONSES:

- **Faster lactate removal:** Compared to passive recovery, active cool-downs typically remove blood lactate more quickly.
- **Minimal impact on muscular soreness:** The majority of research indicates that delayed-onset muscle soreness (DOMS) has not significantly decreased.
- **Improved cardiovascular recovery:** Certain respiratory parameters and heart rate may return to normal faster.
- **Positive psychological perception:** Despite the minimal objective benefits, athletes frequently believe that active cool-downs are advantageous.
- **No detrimental impact on long term adaption** according to available data, training adaptations are not hampered by active cool-downs.^[13]

Table 1: Passive cool-down interventions include sitting rest, saunas, pneumatic leg compression, and electro stimulation. ^[13]

Passive Recovery Interventions	Other Recovery Modalities
Sitting, standing, or lying rest	Cold-water immersion
Sauna	Hot-water immersion
Massage	Contrast-water therapy
Pneumatic leg compression	Cryotherapy
Compression garments	Hyperbaric oxygen therapy
Intermittent negative pressure	Foam rolling
Local or whole-body vibration therapy	Static stretching

Figure 2: some key points for cool-down ^[13]



BENEFITS OF COOL DOWN

1. Better Blood Flow:

Warming up for ten minutes with a relaxing activity opens up blood capillaries and increases blood flow to your skeletal muscles. Increasing blood flow is one of the finest ways to prepare your muscles for exercise since your blood carries the oxygen your muscles need to perform.

2. Increased Oxygen Efficiency:

Warming up causes your blood to release oxygen more easily and at a greater temperature. It's crucial to increase the amount of oxygen your muscles require during exercise by engaging in a warm-up activity.

3. Faster Muscle Contraction/Relaxation:

Exercise increases body temperature, which enhances muscle metabolism and nerve transmission. Your

muscles will work more quickly and effectively.

4. Preventing Injuries:

By loosening your joints and increasing blood flow to your muscles, warming up reduces the likelihood that your muscles will rip, tear, or twist during an exercise session. Additionally, stretching helps your muscles get ready for the exercise you're going to do.

5. Mental Readiness:

Your brain will become more focused on your body and your physical activities as you warm up, which is an added benefit. This emphasis will help you develop your technique, coordination, and skill during your training session. ^[14]

Despite the benefits, many gym members do not consistently perform warm-up and cool-down due to lack of awareness, inadequate knowledge, time constraints, and misconceptions. This can increase injury risk, reduce exercise effectiveness, and delay recovery. ^[12] Awareness strongly influences exercise behavior. Individuals who understand warm-up and cool-down benefits are more likely to include them in routines; lack of awareness may lead to poor habits and increased injury risk. Assessing awareness among gym members is crucial for identifying educational needs. ^[9] While substantial evidence supports warm-up and cool-down benefits, limited research explores awareness, knowledge, attitudes, and practices among recreational gym members. Most studies focus on athletes, coaches, or professionals. Identifying awareness levels in gym members can reveal knowledge gaps and guide educational interventions to promote safe, effective exercise. ^[12]

Active cool-down

Active cool-down interventions usually involve low- to moderate-intensity activities such as jogging, cycling, walking, stretching, or foam rolling after exercise. These methods aim to promote recovery by enhancing blood circulation, aiding lactate clearance, reducing muscle stiffness, supporting cardiovascular recovery, and improving psychological relaxation. Although popular among athletes and fitness enthusiasts, scientific evidence indicates that many of these benefits are limited or vary depending on the individual and exercise context. ^[13]

- **Active Cool-Down's Impact on Same-Day Performance**

Studies show that when the next training session or competition takes place more than four hours later, active cool-downs typically do not improve sports performance. Low-intensity aerobic exercise and stretching after training only marginally or statistically insignificantly improved anaerobic performance metrics like sprint speed and vertical jump height, according to studies involving football players. Small detrimental impacts were noted in a few instances, indicating that active recuperation can marginally hinder performance in the future. Current research indicates that active recovery offers no benefit for performance restoration over prolonged recovery durations exceeding four hours, despite the fact that it is known to boost performance when the recovery interval is relatively brief (10–20 minutes).

- **Active Cool-Down's Impact on Performance the Next Day**

Studies continue to show conflicting results on the impact of vigorous cool-downs on performance the next day. Small to moderate gains in metrics including muscle power, counter-movement jump performance, and muscle function recovery have been shown in several studies. For instance, 24 hours after intense exercise, water-based active recovery has been linked to increased muscle power. Other research, however, has documented little impacts or even performance declines, such as slower sprint speeds and shorter vertical leaps. These contradictory results could be explained by variations in the cool-down

technique used, the sort of exercise that came before it, the participants level of training, and personal preferences.

• Overall Impact on Athletic Performance

Active cool-downs are not very effective at improving subsequent athletic performance. While their effects on same-day or next-day performance are typically minor and uneven, their advantages are more noticeable when recovery times between performances are brief. Although individual reactions and certain workout circumstances may affect results, current research indicates that vigorous cool-downs often neither considerably increase nor significantly harm athletic performance. To determine the circumstances in which active cool-downs might be most advantageous for sports recuperation and performance, more research is needed. [7]

Figure 3: Infographic of active cool-down interventions and their commonly proposed psycho-physiological effects. [13]



MATERIALS & METHODS

The present study was designed as a survey study and was conducted among gym trainers working in gyms and fitness centers. A total of 115 gym trainers participated in the study, and participants were selected using convenient sampling. The study included gym trainers aged between 23 and 50 years who were currently working in gyms or fitness centers, willing to participate in the study, and able to understand and respond to the questionnaire. Individuals who were not gym trainers, trainers who were unable to understand or complete the questionnaire, and participants unwilling to provide informed consent were excluded from the study. Data were collected using a structured online questionnaire administered through Google Forms.

Data Collection Procedure: Participation was voluntary and Trainers were informed about the purpose of the study. Informed consent was obtained prior to conducting the survey. The study was conducted via an online survey. Consent form was taken by all the participants. The questionnaire consisted of 3 parts.

1. Consent form
2. Demographic Information: It consists of Name, Age, Gender and Address.
3. Questionnaire: Participants were given 10 questions regarding the Awareness of warm up and cool down in gym training, from which they had to select appropriate option according to every individual.

RESULT

Data were analyzed using statistical analysis. A total of **115 gym trainers** participated in the study. The age of the participants ranges from **23 to 50 years**, with a **mean age of 26.68 ± 3.86 years** and a **median age of 26 years**.

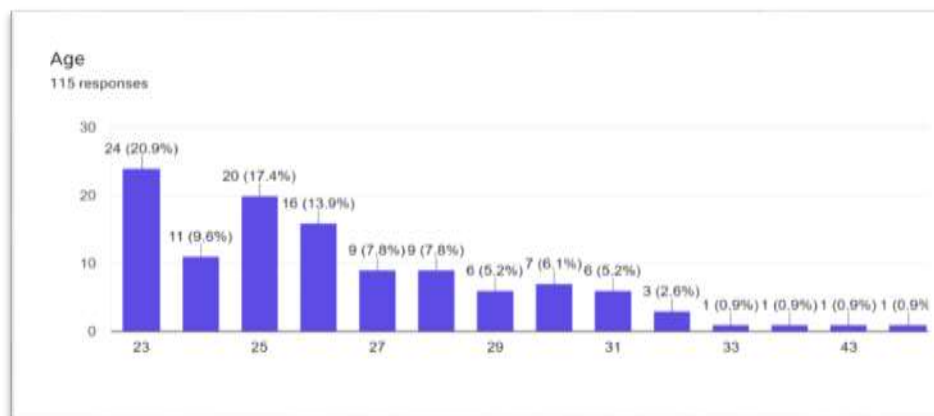
Regarding awareness of warm-up activities, the majority of participants demonstrated adequate knowledge, with **76.5% being fully aware**, **20.0% having little knowledge**, and only **3.5% reports having no knowledge**. Similarly, engagement in warm-up activities was high, as **70.4% of participants reported always performing warm-up exercises**, while **27.0% performed them sometimes** and only **2.6% never performed warm-up activities**.

The duration of warm-up activities showed that most participants (**51.3%**) spent **5–10 minutes** warming up before exercise, followed by **22.6%** who spent **10–15 minutes**, **18.3%** who spent less than 5 minutes, and **7.8%** who spent more than 15 minutes. Furthermore, **83.5%** of participants considered fitness to be highly important, reflecting a positive attitude toward physical health and exercise participation.

Among cool-down methods, **stretching was the most commonly performed activity (30.4%)**, followed by rest (24.3%), light cardiovascular exercise (24.3%), and deep-breathing exercises (19.1%). The majority of participants (**53.0%**) spent **5–10 minutes** performing cool-down activities, while fewer participants spent either shorter or longer durations.

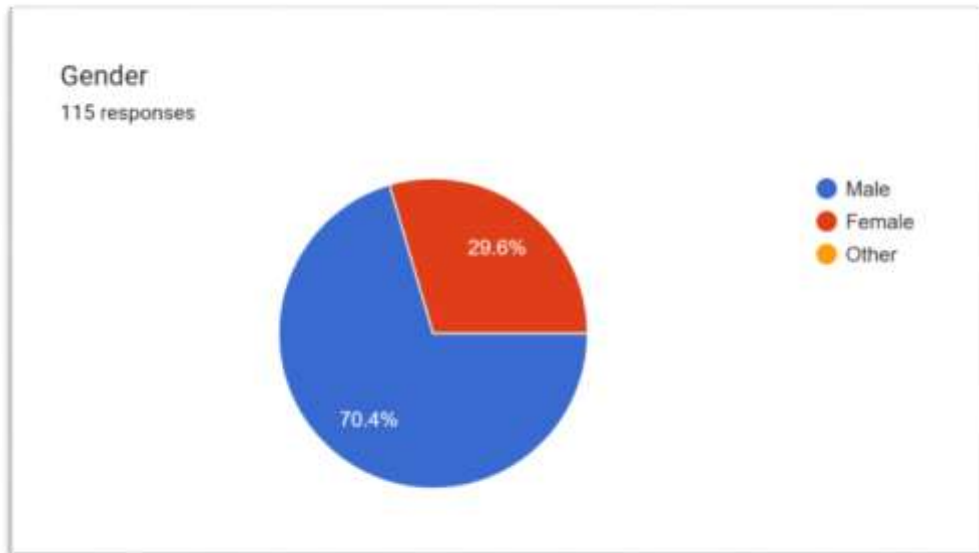
Regarding the perceived importance of cool-down activities, **76.5%** of participants considered them highly important, **20.9%** considered them moderately important, and only **2.6%** reported that they were not important.

DEMOGRAPHIC DATA



Graph 1: Age

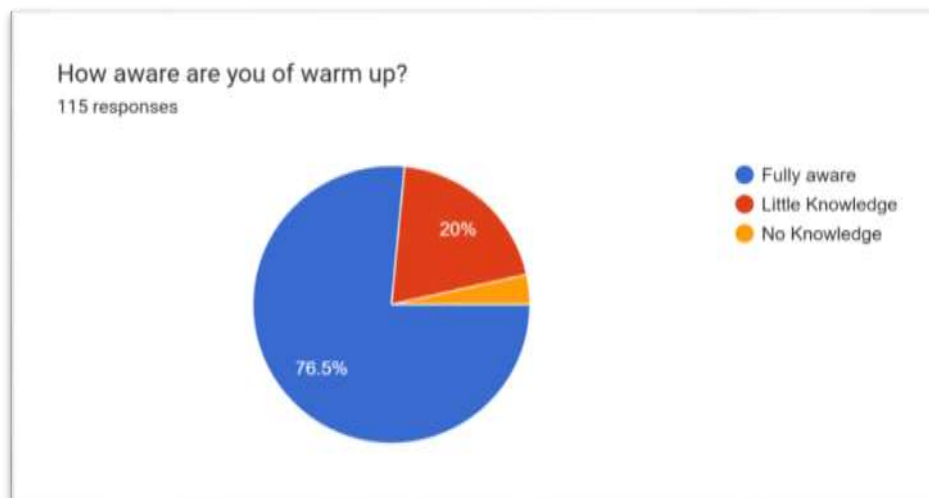
Out of all **115 participants**, the ages of the gym trainers ranged from **23 to 50 years**, with a **mean age of 26.68 ± 3.86 years** and a **median age of 26 years**. The most common age was **23 years**, representing **20.9%** of the participants. The majority of trainers were concentrated in the younger age groups, particularly between **23 and 28 years**, while only a small proportion were above **30 years** of age.



Graph 2: Gender

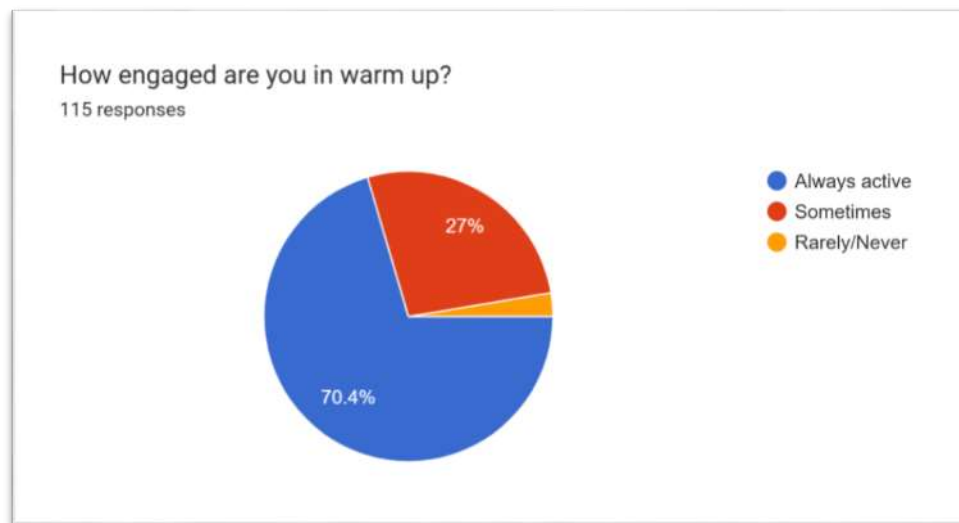
Out of all participants, **70.4% were male**, while **29.6% were female**, indicating that the majority of the study population consisted of males.

QUESTIONS ON AWARENESS OF WARM AND COOL DOWN IN GYM TRAINERS



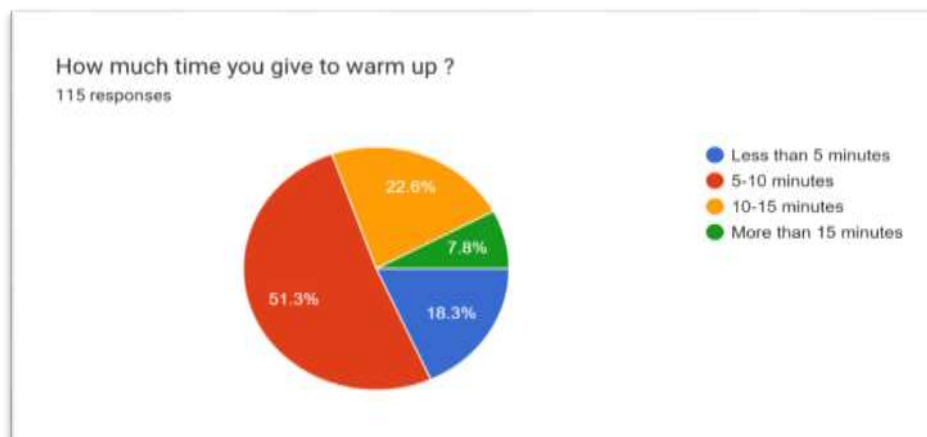
Graph 3: How aware are you of Warm up

The majority (**76.5%**) were **fully aware of warm-up activities**, while **20.0%** had **little knowledge** and only **3.5%** had **no knowledge** regarding warm-up activities.



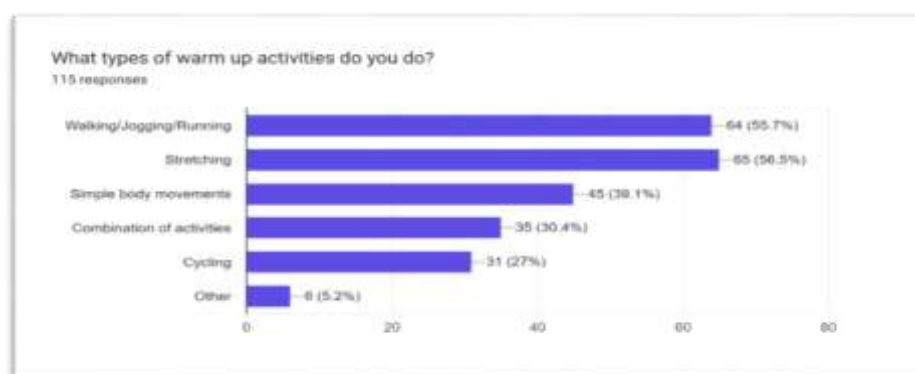
Graph 4: How engaged are you in warm up

The majority of participants (70.4%) were always active in performing warm-up activities, while 27.0% participated sometimes, and only 2.6% rarely or never engaged in warm-up activities.



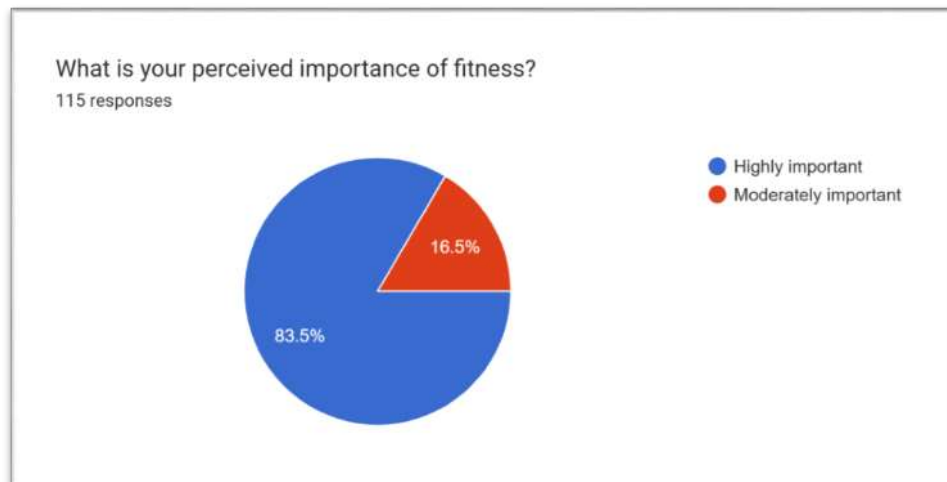
Graph 5: How much time you give to warm up

Out of all participants, 59 (51.3%) spent 5–10 minutes on warm-up activities, followed by 26 (22.6%) who spent 10–15 minutes. Only 9 (7.8%) participants reported spending more than 15 minutes on warm-up exercises. This indicates that most gym trainers preferred a warm-up duration of 5–10 minutes before exercise.



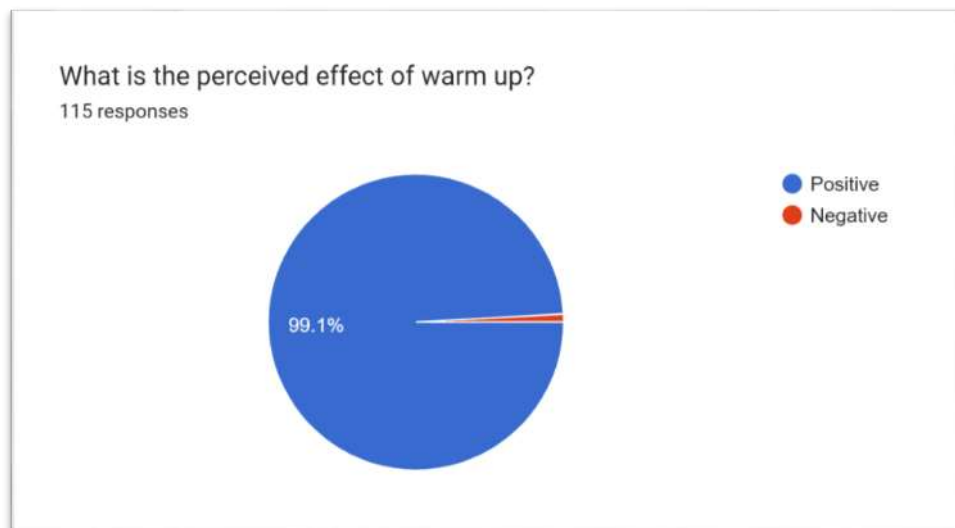
Graph 6: What types of warm up activities do you do

56.5% participants performed stretching and 55.7% does walking/jogging/running for warm-up activities, followed by simple body movements (39.1%), combination activities (30.4%), and cycling (27.0%). Only 5.2% of the participants reported using other warm-up activities.



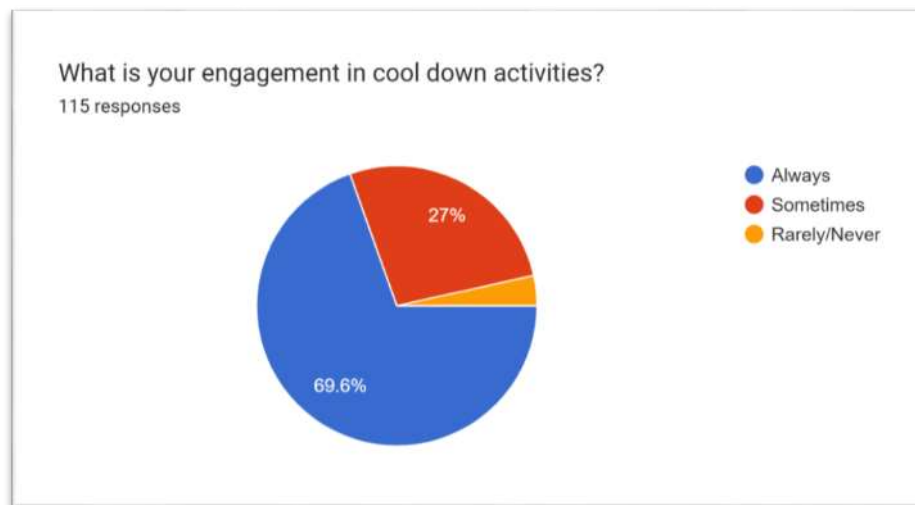
Graph 7: What is your perceived importance of fitness

Out of 115 participants, 96 (83.5%) perceived warm-up exercises as **highly important**, whereas 19 (16.5%) considered them **moderately important**.



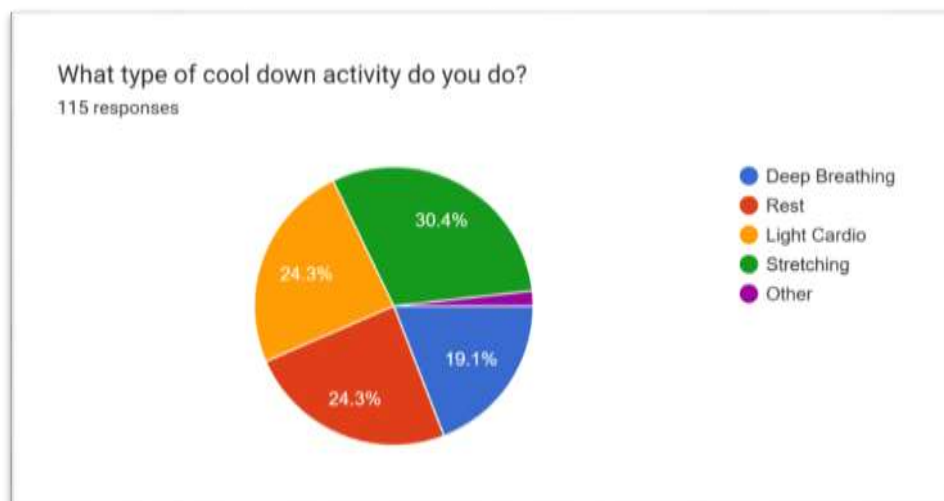
Graph 8: What is the perceived effect of warm up

99.1% reported that warm-up activities have a positive effect, while only 0.9% perceived a negative effect.



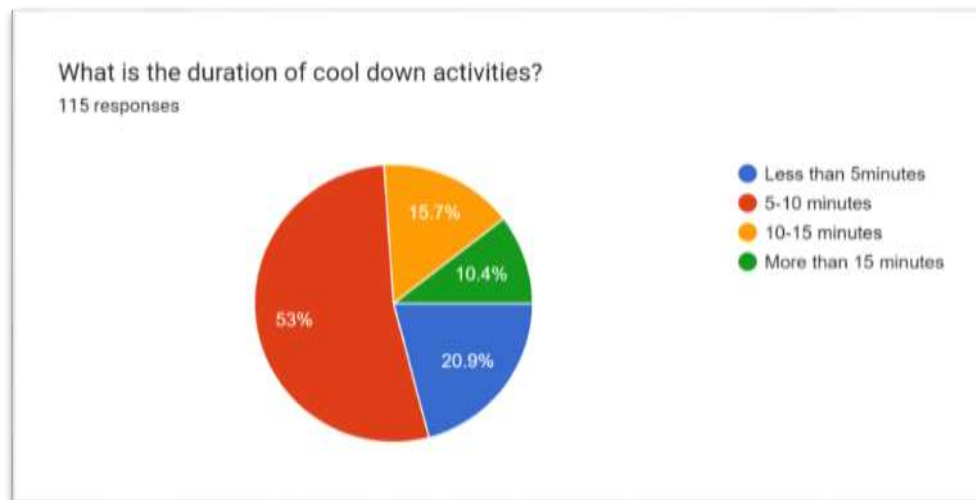
Graph 9: What is your engagement in cool down activities

80 (69.6%) always engaged in cool-down activities, while 31 (27.0%) performed them sometimes. Only 4 (3.5%) participants reported rarely or never engaging in cool-down activities.



Graph 10: What type of cool down activity do you do

35 (30.4%) reported stretching as their most commonly performed cool-down activity, followed by rest and light cardio, which is reported by 28 (24.3%) participants. Deep breathing was practiced by 22 (19.1%) participants, while only 2 (1.7%) participants reported performing other cool-down activities.



Graph 11: What is the duration of cool down activities

Out of all participants, 61 (53.0%) spent 5–10 minutes on cool-down activities. Additionally, 24 (20.9%) spent less than 5 minutes, 18 (15.7%) spent 10–15 minutes, and 12 (10.4%) spent more than 15 minutes on cool-down exercises. These findings indicate that a cool-down duration of 5–10 minutes was the most commonly practiced among gym trainers.



Graph 12: What is the perceived importance of cool down activities

Out of all the participants, 76.5% considered cool-down activities highly important, while 20.9% viewed them as moderately important. Only 2.6% felt that cool-down activities had no importance.

DISCUSSION

In this survey study, 115 gym trainers (mean age 26.68 ± 3.86 years), the majority of participants were male (70.4%). The findings revealed a high level of awareness and positive practices regarding both warm-up and cool-down exercises. However, trainers demonstrated greater emphasis on warm-up activities, with 76.5% being fully aware of warm-up exercises, 70.4% consistently performing them, and 99.1% recognizing their positive effects on exercise performance. Although 69.6% of participants regu-

larly performed cool-down exercises and 76.5% considered them highly important, the results indicate a stronger preference toward warm-up practices for exercise preparation, performance enhancement, and injury prevention.

Compared to the survey of strength trainers in Punjab proposed by Fahim A et al., (2025) the present study showed a higher level of awareness and practice regarding both warm-up and cool-down exercises. A greater proportion of participants were aware of warm-up activities (76.5% vs. 62.7%) and consistently performed them (70.4% vs. 49.0%). Similarly, regular participation in cool-down exercises was also higher in the current study (69.6% vs. 50.0%). These findings indicate that gym trainers in the present study demonstrated better knowledge and adherence to recommended exercise preparation and recovery practices than those reported in the Punjab study. ^[16]

According to Schumacher et al., (2021), warm-up and cool-down exercises are commonly practiced by individuals participating in aerobic activities because they help prepare the body for exercise and support recovery afterward. The study found that the duration and intensity of these activities varies based on factors such as age, sex, and exercise location, suggesting that personal and environmental factors influence exercise habits. Overall, the study emphasizes the importance of including warm-up and cool-down exercises as a regular part of aerobic training. ^[17]

Overall, the findings indicate that gym trainers have good awareness and positive practices regarding warm-up and cool-down exercises. Most trainers regularly perform these activities and recognize their importance in enhancing exercise performance, preventing injuries, and promoting recovery.

CONCLUSION

In conclusion, gym trainers have good awareness and positive practices regarding warm-up and cool-down exercises but cool-down exercises were perceived as less important than warm-up exercises by some participants. Though both warm up and cool down period prior to and later in exercise program has major effect on body's different system.

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