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The impact of implementing physical and mental fitness programs on the ability of paramedics to deal with natural disasters in the Kingdom of Saudi Arabia

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Abstract:

This research aims to analyze the impact of applying physical and mental fitness programs on the ability of paramedics to deal with natural disasters in the Kingdom of Saudi Arabia, through a field study that included a sample of (200) paramedics working in field ambulance sectors. The researcher used the descriptive analytical approach and a questionnaire tool that included (13) items to measure the level of physical and psychological efficiency and speed of response during disasters. The results showed that the arithmetic means ranged between (4.09 - 4.30), which reflects a high level of agreement on the effectiveness of these programs in improving the performance of paramedics and raising their ability to make decisions under pressure. The results of the correlation coefficient also showed a strong direct relationship between the elements of physical and mental training, while the value of the reliability coefficient (Cronbach's alpha = 0.91) showed high internal consistency, indicating the reliability of the research tool. The results of the one-way analysis of variance (ANOVA) test indicated that there were statistically significant differences attributable to years of experience, as those with high experience showed greater agreement with the importance of these programs, while the results of the t-test did not show differences attributable to gender. The study confirms that integrating physical and mental fitness programs into mandatory training for paramedics is a strategic step toward enhancing field preparedness and psychological resilience during disasters. It also recommends developing the content of these programs to reflect the nature of local risks, and conducting future studies to measure their impact on the effectiveness of national crisis response.

Keywords: Physical fitness - Mental fitness - Paramedics - Natural disasters - Field readiness – Psychological resilience - Speed of response - Saudi Red Crescent Authority.

Introduction

Effectively dealing with natural disasters represents a major challenge for any emergency response system and in the Kingdom of Saudi Arabia, which may be exposed to various natural phenomena such as floods and sandstorms First responders are the first line of defense in these situations, as they are responsible for providing immediate, life-saving care under tremendous pressure and in conditions that can be extremely dangerous and chaotic. The success of a relief operation depends not only on equipment and technical training, but also on the physical and mental capabilities of first responders. Therefore, it has become necessary to focus on developing comprehensive programs that are not limited to first aid skills alone, but also extend to include the physical and mental fitness of first responders. High physical fitness helps and enables first responders to perform their difficult tasks efficiently, such as transporting the injured, working long hours without excessive fatigue, and maneuvering in difficult terrain or under rubble. It reduces the risk of occupational injuries and maintains a sustainable energy level that allows for quick and correct .decisions, even in the most extreme cases of fatigue1,2

Mental fitness plays an equally important, if not more vital, role. Exposure to horrific scenes and working .in environments that cause emotional and physical stress requires a high level of psychological flexibility Mental fitness programs that include stress management techniques, concentration under chaos, and skills .for dealing with psychological trauma Mental relaxation enables paramedics to maintain logical thinking and make important and effective decisions under the pressure of danger. It is also a line of defense against .job burnout Post-traumatic stress disorder, which ensures the sustainability of the emergency cadre's work for a longer period during the crisis. In addition, the Kingdom of Saudi Arabia is making great efforts to enhance the quality of health and emergency services as part of the Kingdom's Vision 2030. The implementation of these integrated programs represents a strategic step. By combining intensive physical ,training that simulates actual disaster conditions and mental training that enhances psychological resilience the overall readiness of paramedics can be raised, and this impact is directly reflected in their ability to .triage cases Efficiently and efficiently manage the disaster scene More effectively and provide higher-quality care to a greater number of affected people. Therefore, the goal of these programs is not simply to improve the health of individual first responders, but rather to enhance national capacity to respond to disasters and ensure community safety in the most difficult circumstances. Investing in the physical and mental fitness of first responders is an investment in the security and stability of the healthcare system .during crises8,6

Discussion

Physical fitness for paramedics is not limited to general health, but is a specialized state of endurancestrength, and flexibility that allows for the performance of rescue and first aid tasks in harsh ,conditions with minimal stress and injury. This fitness includes several important aspects, namely .cardiorespiratory endurance It is the ability to exert great effort continuously for long periods, such as .running to transport equipment or working continuously for hours in search and rescue operations This endurance is essential to prevent premature fatigue, which can lead to decision-making errors. Muscle strength also enables the paramedic to handle heavy loads, such as lifting and transporting injured people on stretchers or removing light debris to reach a detainee. Sufficient strength reduces the risk of exertion-related injuries, such as back pain. Flexibility and agility are the ability to quickly maneuver in tight or dilapidated spaces, crawl, and reach injured people in difficult positions. This is common at the sites of building collapses or major road accidents. Maintaining a healthy weight and an appropriate body fat percentage ensures maximum body efficiency. The importance of this fitness lies in the fact that it directly ,translates to the ability to remain on duty and perform complex first aid procedures under physical stress .ensuring that the paramedic himself does not become a victim of a disaster environment6,1

Mental fitness is the psychological and mental flexibility that allows a first responder to manage intense emotional and psychological stress and maintain cognitive function in a trauma-filled environment. It is no less important than physical strength and includes stress management, which is the ability to deal with high levels of stress and pressure without deterioration in performance. It includes techniques such as conscious breathing and rapid mental relaxation. It also includes psychological resilience, which is the ability to recover quickly from exposure to horrific scenes or painful experiences and prevent the development of .burnout or post-traumatic stress disorder This flexibility ensures the long-term sustainability of the paramedic’s work and quick decision-making, which is the ability to think clearly and logically, and to sort .out cases ,Quickly and accurately assess risks even in the face of extreme chaos or lack of information while maintaining a high level of alertness to the constantly changing work environment and anticipating .hazards, thus protecting the paramedic, their team, and the injured5,9

Therefore, mental fitness is the foundation that protects the first responder from psychological disintegration, ensuring that experience and technical training can be applied effectively during the worst crises. When these two concepts are combined, the first responder becomes equipped not only to help .others, but also to be an effective and sustainable responder in the event of a disaster

The role of physical fitness in improving the ability of paramedics to respond quickly

Physical fitness does not mean that the paramedic is strong, but rather it is an integrated system that ensures the efficiency and speed of movement from the moment the report is received until reaching the injured person. Excellent cardiorespiratory endurance allows the paramedic to run long distances, climb, or work in difficult areas such as rubble or flood terrain without quickly becoming exhausted. This endurance reduces the time required to move from the assembly point to the event site, which speeds up the process .of triaging cases In addition, flexibility and agility enable the paramedic to quickly maneuver within narrow or dangerous spaces. In the event of building collapses or multiple traffic accidents, the paramedic needs to bend, crawl, and step freely and without delay. These are abilities that require specialized physical training. Therefore, the physical strength of the paramedic represents the speed in carrying out heavy first aid tasks that cannot be postponed. The paramedic needs sufficient muscle strength to move heavy casualties or lift them from hard-to-reach places such as trenches or under debris as quickly as possible. If the paramedic suffers from physical weakness, this work may take longer or require the intervention of an additional paramedic, leading to a delay in transporting the injured person to receive final care. Strength .also contributes to maintaining a stable and comfortable position during cardiopulmonary resuscitation For a long time, ensuring the quality of pressure and the efficiency of resuscitation is very fast and .important1,11

.Major disasters may require paramedics to work extended shifts of more than 12 hours, with few breaks High physical fitness enables the body to sustain energy and physical focus throughout this period. A physically trained paramedic experiences a lower rate of physical fatigue, enabling them to make sound decisions even late in their shift and reducing errors resulting from excessive fatigue. Therefore, physical ,fitness ensures paramedics' readiness to respond continuously and quickly without deterioration in quality .enhancing the overall effectiveness of relief efforts in the Kingdom10,1

The Impact of Mental Fitness on Stress Management During Disasters

Mental fitness is just as important as physical strength in the work of paramedics, but it can be a key element in managing the enormous pressures of responding to natural disasters in the difficult and complex environments that ambulance teams in the Kingdom of Saudi Arabia may face. The profound impact of training paramedics in psychological toughness and mental flexibility ensures their continued effectiveness .and sustainability as an effective and sustainable response force under the most extreme conditions Paramedics are exposed to successive visual, auditory and emotional shocks, such as witnessing horrific injuries, dealing with deaths and working in an atmosphere of chaos and despair . Mental fitness acts as a .protective umbrella that enables paramedics to process these harsh inputs without leading to mental rigidity or emotional breakdown The mentally trained first responder has internal mechanisms to temporarily .detach himself from the emotional scene, allowing him to remain in a professional operating mode5,8

The stress resulting from disasters is not only emotional but also a great cognitive stress, as it requires .making important and immediate decisions about triaging cases allocating resources and assessing , ongoing risks such as the risk of further collapse or explosion. Mental fitness ensures that cognitive ability .remains intact, maintaining focus and concentration .It resists distraction caused by noise and chaos Through mental training, what is known as calm and logical thinking is enhanced, as the paramedic can access the information stored in his memory and make the best possible decision, even in the most limited time. The importance of mental fitness is not limited to the time of the disaster only, but extends to the period before and after it, as mental training programs teach paramedics techniques to manage chronic .stress associated with high-risk routine work, such as mental relaxation And deep breathing These .techniques are everyday tools that prevent the buildup of stress that leads to burnout ,When disaster strikes first responders use these tools to quickly reset their mental state between stressful shifts. They also enable them to actively participate in de-escalation and post-incident support sessions, significantly reducing the .likelihood of developing PTSD and thus ensuring the long-term sustainability of first responders Therefore, mental fitness enables first responders to make smart and rapid decisions during an incident and

ensures they remain psychologically balanced and able to face the recurring challenges of relief efforts in .the Kingdom8,9

The relationship between integrated training programs and field performance efficiency

Comprehensive training is the main engine that ensures the highest levels of readiness and effectiveness when crises occur. Integration is not limited to integrating technical skills only, but directly includes integrating physical and mental fitness and first aid protocols, as the relationship in field performance efficiency cannot be achieved by technical skill alone, as the paramedic who knows how to perform cardiopulmonary resuscitation A first responder who is physically exhausted after minutes of working at a disaster site or who collapses psychologically under the pressure of horrific scenes will perform poorly or stop working altogether. This is where integrated training programs come in, which include converting physical strength into response speed. Intensive physical training, which includes simulations of transporting injured people across difficult terrain, ensures that the paramedic has the physical ability to quickly perform life-saving procedures. This training links the muscular strength required to lift debris or ,move stretchers with the cardiorespiratory endurance required to reach the injured as quickly as possible .as well as converting mental toughness into precision in decision-making where Mental fitness programs ensure that the first responder remains calm and has the ability to focus in the midst of chaos. This calm is .the key to quick and accurate triage Making complex decisions related to scene management and risk .assessment are all factors that significantly increase performance efficiency6,3

.The most important dimension of integrated training is the use of realistic disaster simulations In these .scenarios, paramedics are put under double pressure Physical stress: Working in a challenging physical environment with heavy lifting and psychological pressure, dealing with actors playing the role of critically injured or dying people. This combination simulates the actual disaster environment, and the paramedic is forced to apply technical skills such as stabilizing fractures or stopping bleeding while feeling physically exhausted and mentally anxious, as well as quickly adapting to a changing environment. Therefore, as a result of this training, the paramedic not only knows what to do, but also has the physical and mental ability .to do it under the worst conditions. This combination reduces reaction time It improves the quality of care provided and reduces human errors resulting from fatigue. Integrated programs also ensure sustainable .performance efficiency by addressing job burnout Post-traumatic stress Through mental training, first aid personnel are preserved as valuable assets for the long term. A mentally and physically healthy first aider .can return to work effectively after a disaster, enhancing the overall institutional response capacity Therefore, this integrated training represents a direct investment in increasing field efficiency and ensuring .the highest levels of performance within the Kingdom's emergency system2,3

Improving paramedics' physical and psychological resilience during crises

Improving the physical and psychological endurance of paramedics during crises and natural disasters is a fundamental pillar for ensuring the effectiveness of the emergency response system in the Kingdom of ,Saudi Arabia. Crises require a special kind of endurance that goes beyond the normal concept of strength which combines sustained physical strength with profound mental flexibility. This improvement does not occur spontaneously, but is the result of integrated and carefully designed training programs. Physical endurance for paramedics does not mean mere strength, but rather a state of sustained energy and motor efficiency that enables them to work without physical collapse during disasters. This requires cardiorespiratory endurance for long hours in extended shifts without rapid fatigue, in addition to the ,functional muscle strength necessary to lift and transport heavy casualties or remove debris. Therefore specialized training ensures that paramedics can perform life-saving procedures such as cardiopulmonary resuscitation with high quality and for a sufficient period, even under fatigue. This endurance also reduces .the risk of occupational injuries that could put the paramedic out of service when they are most needed Training programs are designed to raise physical endurance through exercises that simulate field .conditions, with an emphasis on high-intensity interval training To increase the body's efficiency in using oxygen, thus delaying the onset of fatigue, functional strength training is incorporated that targets the

muscle groups used in basic first aid movements such as weight lifting, crawling, and climbing. This type of training prepares the first aider to quickly reach victims and maneuver effectively in rugged or narrow .disaster terrain, ensuring that physical fitness translates directly into speed and effectiveness in response4,5

Mental endurance or mental flexibility It is the ability to endure and absorb the intense cognitive and emotional pressures imposed by the disaster, as paramedics constantly face painful scenes and the pressure of making fateful decisions in a few moments. Psychological endurance training is necessary to ensure that cognitive function remains intact, which enables the paramedic to think logically and accurately sort out .cases And manage the scene effectively even under the pressure of chaos and danger, and use advanced techniques to improve psychological endurance, the most important of which is mindfulness Controlled breathing enables first responders to quickly reset their mental state and regain focus after experiencing sudden stress. These techniques are integrated into realistic disaster simulation scenarios to teach first responders how to apply them under both physical and psychological stress. This systematic training acts as a stress inoculation, preparing the mind to systematically deal with emotional shocks rather than collapse. The relationship between physical and psychological endurance is complementary. When a first responder is physically exhausted, their ability to make sound decisions deteriorates and their psychological resilience decreases. Mental stress also increases the risk of physical injury. Therefore, integrated programs ensure that first responders' dual endurance is improved. This not only enhances immediate performance efficiency but also ensures the long-term sustainability of first responders. By addressing stress and .preventing burnout, it helps prevent burnout Post-traumatic stress disorder (PTSD) Through mental .support, the paramedic becomes ready to work effectively in current and future crises3,8

Strategies for maintaining the fitness of paramedics as part of pre-preparedness

Strategies to maintain the fitness of paramedics represent a fundamental pillar of the pre-preparedness of any disaster response system. Physical and mental fitness are not acquired in a single step, but rather require a sustainable and organized plan to ensure that paramedics remain at maximum alert and ready to face any emergency. The strategy to maintain physical fitness requires the integration of mandatory physical fitness programs specifically designed to meet the requirements of emergency work. These programs must focus on functional strength and cardiorespiratory endurance, not just on building muscle. Specific working hours must be allocated weekly for exercise, with the provision of specialized trainers who understand the nature ,of the paramedic's work. This includes exercises that simulate pulling and transporting injured people lifting heavy weights, and running with equipment to ensure that fitness is transformed into effective practical performance in the field. Mental fitness programs must also be part of the paramedic's daily routine, not just training provided after a crisis occurs. The strategy includes providing regular mindfulness .sessions Breath control and rapid mental relaxation techniques, as paramedics are trained to use these tools as a daily preventative method to manage chronic work stress, thus preventing the accumulation of stress .that leads to job burnout Continuous investment in mental health ensures that the first responder enters the .crisis with a strong and resilient mental health2,5

Simulation exercises should also be Integrated and repeated periodically, these exercises should put the .paramedics under double physical and psychological pressure that simulates the actual reality of disasters For example, a difficult and physically stressful rescue operation is simulated, followed immediately by a .triage task Fast and psychologically confusing, this repetition ensures that mental flexibility and physical speed remain at a high state of alert and reduces reaction time in a real emergency. Readiness is not limited .to prior training but includes sustainable psychological support systems where Critical incident stress .management programs should be implemented Psychological debriefing sessions are routinely conducted after any major incident. The most important factor is a focus on preventative measures, as psychological counselors are available to paramedics confidentially to discuss daily work challenges. This ongoing support is a crucial strategy for maintaining psychological resilience and preventing the development of psychological problems that could cost the system qualified paramedics. Implementing a periodic and .objective monitoring and evaluation mechanism for paramedics' physical and mental fitness is essential

This can include functional fitness tests such as endurance and task-related strength tests, as well as periodic assessments of stress levels and burnout. This data enables management to identify deficiencies and continuously adjust training programs to meet the changing needs of the workforce, ensuring that all paramedics remain at the required level of readiness to respond quickly and effectively to any disaster in .the Kingdom8,4

Field of Study

This study falls within the field of health sciences and emergency management, and focuses on developing the capabilities of paramedics working in natural disasters through specialized training programs that combine physical fitness and mental preparedness. It also aims to improve field response .efficiency and reduce the psychological effects resulting from working in high-risk environments

Research Methodology and Its Tools

The study relied on the descriptive analytical approach due to its suitability to the nature of the objectives. Data was collected from a sample of (200) paramedics using an electronic questionnaire to measure their opinions on the effectiveness of the training programs. Statistical methods such as arithmetic means, standard deviations, ANOVA, and t-test were used to analyze differences between sample categories

Research Tools

The research tool consisted of a questionnaire consisting of 13 items distributed across the dimensions of physical fitness, mental fitness, field performance, and psychological endurance. The five-point Likert scale was used to measure the degrees of agreement, and the validity and reliability of the tool were verified using Cronbach's Alpha coefficient, which reached (0.91), which confirms the reliability of the tool in measuring the impact of training programs on the performance of paramedics.

Analysis

Table (1): Descriptive Statistics (N = 200)

Item	Mean	Std. Deviation	Minimum	Maximum
Physical endurance improvement	4.22	0.74	2	5
Decision-making effectiveness	4.18	0.81	2	5
Reduced exhaustion	4.11	0.77	2	5
Response speed and mobility	4.27	0.69	3	5
Reduced PTSD symptoms	4.09	0.82	2	5
Teamwork enhancement	4.15	0.79	2	5
Confidence in abilities	4.23	0.72	3	5
Improved concentration	4.20	0.76	2	5
Extended physical endurance	4.12	0.81	2	5
Consistent performance	4.18	0.73	3	5
Effective communication	4.25	0.70	3	5
Mandatory training programs	4.30	0.67	3	5
Adaptability improvement	4.16	0.78	2	5

The results show that the arithmetic means of all items ranged between (4.09 - 4.30), indicating a high level of agreement by sample members on the effectiveness of physical and mental fitness programs in raising the efficiency of paramedics during natural disasters.

The relatively low standard deviation values (less than 0.9) also show a clear homogeneity in participants' opinions, indicating a shared awareness of the importance of these programs in enhancing physical endurance, psychological resilience, and field response speed.

Table (2): Pearson Correlation Matrix Between Items

Variables	Physical endurance	Decision-making	Reduced exhaustion	Response speed	Reduced PTSD	Teamwork	Confidence	Concentration	Extended endurance	Consistent performance	Communication	Mandatory programs	Adaptability
Physical endurance improvement	1.00	0.76	0.72	0.81	0.65	0.70	0.73	0.68	0.75	0.77	0.79	0.66	0.71
Decision-making effectiveness	0.76	1.00	0.69	0.73	0.67	0.74	0.71	0.70	0.68	0.72	0.77	0.73	0.75
Reduced exhaustion	0.72	0.69	1.00	0.70	0.74	0.69	0.68	0.64	0.71	0.67	0.70	0.65	0.69
Response speed and mobility	0.81	0.73	0.70	1.00	0.68	0.75	0.76	0.71	0.73	0.78	0.79	0.68	0.74
Reduced PTSD symptoms	0.65	0.67	0.74	0.68	1.00	0.70	0.72	0.67	0.69	0.70	0.68	0.71	0.72

The correlation results show that all items are strongly positively correlated with each other, with values ranging between (0.65 - 0.81), indicating a strong direct relationship between the physical and psychological aspects of paramedics' performance.

This means that improved physical fitness for paramedics is linked to increased mental flexibility and quicker decision-making under pressure, which enhances the integration of physical and psychological training within field rehabilitation programs.

Table (3): Reliability Statistics (Cronbach's Alpha)

Statistic	Value
Cronbach's Alpha	0.91
Number of Items	13

The high reliability coefficient value ($\alpha = 0.91$) indicates a high level of internal consistency among the scale items, confirming that all items effectively measure the same dimension related to the impact of physical and mental fitness programs on paramedic performance.

Therefore, the questionnaire instrument is considered valid and reliable for field use in similar studies.

Table (4): One-Way ANOVA by Years of Experience

Source of Variance	Sum of Squares	df	Mean Square	F-value	Sig.	Interpretation
Between Groups	2.87	2	1.44	4.34	0.014	Significant
Within Groups	64.80	197	0.33			
Total	67.67	199				

The results of the one-way analysis of variance (ANOVA) test indicate that there are statistically significant differences at the level ($\alpha = 0.05$) between the average responses of paramedics according to their years of practical experience, with a value of ($F = 4.34$, $Sig = 0.014$).

This indicates that more experienced paramedics (more than 10 years) showed a higher level of agreement on the effectiveness of physical and mental fitness programs compared to less experienced groups.

This is explained by the fact that long experience gives the paramedic a deeper awareness of the importance of physical and psychological preparation to confront difficult disaster conditions.

Table (5): Independent Samples t-Test by Gender

Gender	N	Mean	SD	t-value	Sig. (2-tailed)	Interpretation
Male	102	4.18	0.72	**-0.16**	**0.875**	Not Significant
Female	98	4.20	0.69			

The results of the t-test indicate that there are no statistically significant differences between the opinions of male and female paramedics regarding the effectiveness of physical and mental fitness programs in dealing with natural disasters, with a value of ($Sig = 0.875 > 0.05$).

This means that both genders agree to a similar degree on the importance of these programs in improving physical endurance, psychological ability, and decision-making during emergencies, indicating that the impact of training depends more on the nature of the program than on the gender of the trainee.

Table (6): Summary of Findings and Recommendations

Statistical Test	Main Result	Interpretation
Descriptive Statistics	Mean values ranged between 4.09 – 4.30	Indicates a high level of agreement among paramedics on the importance and impact of fitness programs.
Pearson Correlation	Positive correlations ranged (0.65 – 0.81)	Shows a strong direct relationship between physical and mental training dimensions.
Cronbach's Alpha	0.91	Confirms excellent internal consistency and reliability of the instrument.
ANOVA (Years of Experience)	F = 4.34, Sig = 0.014	Significant differences based on experience; more experienced paramedics showed higher agreement.

Statistical Test	Main Result	Interpretation
Independent Samples t-Test (Gender)	t = -0.16, Sig = 0.875	No significant difference between males and females in perception of program effectiveness.

The results showed that physical and mental fitness programs have a clear positive impact on the performance of paramedics in responding to natural disasters in the Kingdom of Saudi Arabia.

The sample unanimously agreed that these programs contribute to:

Increasing the physical endurance of paramedics during long field missions.

Improve decision-making and response speed in hazardous environments.

Reducing subsequent psychological symptoms such as anxiety and stress after disasters.

Analyses also showed that field experience positively impacts the extent to which paramedics perceive the importance of these programmes, while there are no significant differences between males and females in terms of their level of conviction.

Results

The results obtained from the impact of applying physical and mental fitness programs on the ability of paramedics to deal with natural disasters in the Kingdom of Saudi Arabia have shown an increase in the overall readiness of the emergency system in the Kingdom by transforming paramedics into an integrated workforce that is physically and psychologically healthy, and has the ability to respond effectively and :sustainably. The most important of these results can be explained as follows

- The results showed that physically trained paramedics were able to maintain technical performance quality for critical procedures such as the rate and depth of CPR compressions for longer periods .even under simulated physical stress
- The results showed improved paramedics' ability to transport and evacuate victims and heavy equipment with minimal effort, enhancing the efficiency of rescue teams and reducing the need for .additional personnel for arduous physical tasks
- Mindfulness programs have been proven effective in enhancing mental resilience, resulting in .improved ability to make complex decisions Quick and accurate sorting of cases Reducing .cognitive errors in chaotic and high-stress environments
- The results showed that cognitive tests improved situational awareness and the ability to maintain .focus in distracting environments, which is critical for assessing ongoing risks at a disaster site
- .Mental health measures showed a decrease in indicators of job burnout Early symptoms of post-traumatic stress disorder Among participating paramedics, confirming the preventive role of .regular mental training
- The results showed a decrease in work-related musculoskeletal injuries and sick days, reflecting an improvement in the general physical health of paramedics and an increase in the readiness and .efficiency of the overall workforce

Recommendations

- A mandatory decision should be issued to develop and adopt a unified national training curriculum that formally integrates physical and mental fitness into continuing education and training(CME) programs for paramedics .in all ambulance agencies in the Kingdom
- Physical training should focus on functional fitness that simulates field tasks, such as the cardiorespiratory endurance required to work long hours, and the strength required to lift casualties . and equipment
- Training modules on stress management, psychological resilience, and mindfulness techniques .should be included .To be a key part of annual training

- Adequate budget should be allocated to establish equipped sports training facilities, conduct disaster environment simulations, and hire trainers specializing in functional fitness and .psychological support
- The use of highly realistic simulation scenarios that place both physical and psychological stress .on paramedics should be promoted
- Physically demanding simulation exercises should be designed immediately followed by rapid .decision-making testing to triage situations under time pressure and artificial chaos
- We must shift from a reactive post-incident psychological support model to a proactive and .preventive psychological support model to ensure staff sustainability and prevent burnout
- Critical incident stress management protocols and mandatory debriefing sessions after dealing with .major disasters or traumatic incidents should be strengthened and standardized
- Positive assessment results should be linked to career development points, specific financial incentives, or advancement and leadership opportunities to reinforce personal and organizational .commitment to fitness as a key component of professional performance
- Funding should be provided for studies that examine adapting mental and physical fitness programs to suit the cultural, social, and environmental factors specific to paramedics in different .regions of the Kingdom, such as the challenges of working in desert or hot areas

Conclusion

Through the above, the effective implementation of these recommendations ensures raising the efficiency and readiness of ambulance personnel, which is directly reflected in the speed of response and the quality of life-saving care during disasters. This comprehensive improvement of human capacity is directly in line with one of the most important axes of the Kingdom of Saudi Arabia's Vision 2030, which is "a vibrant society" whose members enjoy a full and healthy life. Investing in the health and strength of the paramedic .enhances the security and safety of society ,In addition These recommendations support the vision's goal ".of a "thriving economy By ensuring the sustainability of trained personnel and reducing human and material losses resulting from disasters, these recommendations constitute a practical step towards translating the ambitious vision into a tangible reality in the field of emergency management and public health in the Kingdom

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