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## ***Riyazat* (exercise): An ancient gem of Unani regimenal therapies for preservation of health**

**Saad Ahmed, Shamim, Lubna Fatima and Nazim Saifi**

### **Abstract**

*Riyazat* is a planned, structured and repetitive bodily movement that is done to improve or maintain physical fitness and overall health. It plays an important role not only in maintaining good health but also in preventing and curing certain ailments as well. Lifestyle diseases are ailments that are primarily based on the day to day habits of people. Lack of exercise and habits that detract people from the activity and push them towards a sedentary routine, these are the major causes which serve as an important factor in the rising prevalence of lifestyle diseases. Some of the emerging lifestyle diseases are obesity, hypertension, type 2 diabetes, cardiovascular diseases, joint diseases and psychological disorders. Mortality and morbidity rates have also increased with increasing levels of these diseases. Frequent and consistent exercise helps in the prevention of these diseases. It helps in maintaining or losing weight, improves metabolic function and mental health by reducing stress. In this paper, ancient Unani literature and modern scientific literature regarding the benefits of *Riyazat* (exercise) in different disease conditions are reviewed and an attempt has been made to showcase the different *Riyazat* techniques which may prove beneficial in different diseases.

**Keywords:** *Riyazat*, Unani, exercise for health, disease wise exercises

### **Introduction**

Many ancient Unani physicians like Hippocrates, Galen, *Razi* and Avicenna have discussed the beneficial effects of *Riyazat* in their treatise<sup>[12, 13]</sup>. *Riyazat* is a voluntary movement with the purpose of *Tanqiyae mawad* (evacuation of wastes material) for an individual. It plays an important role not only in maintaining good health and prevention of diseases but also in curing certain ailments as well. The objectives of performing *Riyazat* are as follows:

- To improve *Istehala* (metabolism) for proper functioning of the body,
- To remove waste product from the body,
- To tone up individual organs,
- To maintain or improve flexibility of the body, to maintain coordination and balance of the musculoskeletal system of the body,
- To relieve anxiety, insomnia, depression as well.

In this way exercise strengthen the body as a whole. Although Unani system of medicine has its own areas of expertise and remarkable results in curing the disorders of musculoskeletal system, respiratory conditions, skin, liver, and nervous system disorders and several other acute and chronic disorders whereas other system have failed to give desired response. Now this system has crossed national boundaries and popular along the masses globally. In some of its expertise as mentioned above it has a remarkable role in some of aforesaid disorders using exercise as an element to cure the same<sup>[14]</sup>.

### **Exercise recommendations for health**

The ACSM recommends that people of all ages accumulate 30 minutes of moderate physical activity on most, if not all, days of the week. Brisk walking is an example of the type of activity recommended and can easily be incorporated into most people's lives. Adherence to a regular program is essential as the health benefits are quickly lost on cessation of activity<sup>[13, 15]</sup>.

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**Biological mechanisms of exercise in health**

Physical fitness, achieved through regular exercise and spontaneous physical activity, confers resilience by inducing positive psychological and physiological benefits, blunting stress reactivity, protecting against potentially adverse behavioural and metabolic consequences of stressful events and preventing many chronic diseases. Physical fitness appears to buffer against stress-related diseases owing to its blunting/optimizing effects on hormonal stress-responsive systems, such as the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. Another mechanism whereby regular exercise may confer resilience is through minimizing excessive inflammation. Chronic psychological stress, physical inactivity and abdominal adiposity have been associated with persistent, systemic, low-grade inflammation and exert adverse effects on mental and physical health. It is now thought that inactivity leads to toxic levels of unused oxygen and a high energy state in a mitochondrion. This creates more free radicals that cause damage to the mitochondrion and, therefore, the cell. Damaged mitochondrion creates inflammation, faster aging and leads to most long term conditions. Exercise, therefore, increases the resilience of every cell and this is done by anti-oxidants and these are stimulated by physical activity. Thus exercise has such far-reaching benefits to health [13, 15].

**Value of Exercise** [14, 16]

- It hardens the organs and renders them fit for their functions
- It results in a better absorption of food, aids assimilation, and by increasing the innate heat, improves nutrition
- It clears the pores of the skin
- It removes effete substances through the lungs
- Strengthen the physique.

**Various forms of exercise** [14]

There are two main forms of exercise:

- (a) That pertaining to the ordinary human undertakings.
- (b) That which is undertaken for its own sake, namely for the advantage accruing from its pursuit (i.e. sports, athletics, gymnastic etc.)

**There are differences between the two forms** [16]

One is strong and powerful, the other weak and light; one is speedy and other is slow. Athletics implies strenuous exertion, combining swiftness with energy, recreative exercise, undertaken for relaxation, implies leisurely movements. There are all grades between these extremes, and there is mean between them (called moderate exercise).

**List of the forms of exercise** [16]

- Strenuous forms-wrestling contest, boxing
- Quick marching-running, jumping over an object higher than one foot
- Throwing the javelin-fencing
- Equivitation or horsemanship-hunting

**Heat produced by exercise** [16]

Exercise is appropriate to create undue heat, and inflammation up to an in temperamental degree, whereas there is only a moderate aggregation of heat when the innate heat is imprisoned, and so, inflammation is less feasible. You know that this is so, because of the fact that exercise makes breathing labored and hurried, incomparably more than when the innate heat is constricted and imprisoned by some other

agent similar to sleep. For instance, to be submerged in taped water brings about such an imprisonment of innate heat, and produces rapid respiration, yet not nearly to the extent produce by toil and exercise. Careful consideration shows that, nothing increases the heat as much as these do but it is not the mere exercise which accounts for this, as if resting would bring about a cessation of heat production, it is rather that the heat produced by exercise simply moves on the breath to the exterior parts, as long as generation of the breath takes place.

**The doctrines of different old physicians regarding exercise** [14, 17]

The use of therapeutic exercise was recorded as early as 800 BC in the manuscript of arthveda. According to this manuscript exercise and massage were recommended for choric rheumatism. However most historians in the field believed that, therapeutic exercise first gain popularity and spread use in ancient Greece.

Herodicus is believed to be the first physician to write on the subject, and is considered the father of therapeutic exercise. Herodicus claimed to have used exercise to cure himself of an incurable disease and he developed an elaborate system for athletes.

Hippocrates (460 BC–370 BC) the most famous herodicus student, wrote on the beneficial effects of the exercise and its value in strengthening muscles, improving mental attitude, decreasing obesity.

Galen (125 – 195 AD) considered the same as the greatest physician in the Rome, wrote on exercise in 2<sup>nd</sup> century AD. He was appointed as the physician for gladiators and classified exercise according to intensity, duration and frequency. In the 5<sup>th</sup> century another physician Aurilianus recommended exercise during convalescence from surgery and advocated the use of weights and pulleys.

Razi (865AD-925 AD) has described time, uses, types and precautions in *kitabul murshid* measures before and after *Riyazat* Avicenna (980AD-1030AD) has well discussed regarding *Riyazat* in his treatise, *Al Qanoon* Fi Tib. He detailed the mechanism of actions, varieties, methods, special exercise for each organ, therapeutic exercise, the limit and amount of *Riyazat*. Therapeutic exercise of modern times appears to have originated in Sweden in 19<sup>th</sup> century with fencing instructor named Per Henri Ling. His system of therapeutic exercise included dosage counting and detailed instruction of each exercise. He demonstrated that precise movements if scientifically applied could serve to remedy disease and dysfunction of the body.

In 1902 AD, Swiss physician Frankel wrote a controversial paper. He proposed an exercise program for ataxia that incorporated repetitive activities to improve damaged nerves. In 1934 AD, Codmen developed a series of exercise to alleviate the pain in shoulder these exercises are referred to as codmen or pendulum exercises. One of the most important advancement was the adaptation of progressive resistance exercise (PRE) by Delorme in 1945, which was used in military hospitals to rehabilitate patient after surgery of knee. Kabat in 1956 introduced diagonal movement and use of a variety of reflexes to facilitate muscle contraction.

**Types of exercise** [12, 14]

- *Riyazate Haqeeqi/Kulli/Complete exercise* e.g. horse riding [18, 19]
- *Riyazate Juziyya/Partial exercise* e.g. stone lifting [18, 19, 20, 21].

Partial exercise is a part of real exercise which is related to the exercise of specific organ and specific *Quwa* (faculties) like reading of small alphabets by the eyes, weeping is the exercise of children, likewise angriness is the exercise of *Barid Mizaj* (cold temperament) persons.

### Another classification of *Riyazat*

*Riyazate A'arziya/Gair Iradi* (unwillingly)

Exercise in which there is no will to do exercise, it is done in daily ordinary occupational activities like for iron-smith and washer man etc [19, 21].

### *Riyazate Zatiya/Khalisa* [14, 12]

This exercise is done purposefully to gain its benefits. It is further subdivided according to its duration, strength, and mode etc. [19, 21]

### Types of *Riyazat zatiya/khalisa* According to duration [12]

- ***Riyazat qaleela***: Short duration exercise [19]
- ***Riyazat kaseera***: Long duration exercise [19, 22]
- ***Riyazat moatadil***: Moderate duration exercise [19, 22]

### According to strength [14, 12]

- ***Riyazat qawiya/shadeeda***: forceful exercise [19, 22]
- ***Riyazat zaeefa/mild exercise***: in which less force is used [19, 22]
- ***Riyazat moatadil***: average strenuous exercise in which average force is used [19, 22]

### According to *sura'at*

- ***Riyazat sariya***: the exercise in which movements should be rapid and fast [19, 22]
- ***Riyazat batiya***: exercise in which movements should be dull and delay [19, 22]
- ***Riyazat moatadil***: movements in between *Riyazat sariya* and *batiya* [19, 22]

### According to strength and *sura'at* [14]

- ***Riyazat hasheesha***: strong and fast movements are done [22]
- ***Riyazat mutarakhiya***: in which movements are weak and slow [22]
- ***Riyazat moatadil***: exercise between *hasheesha* and *mutarakhiya* [22]

### Modes of *Riyazat/ Exercise*

A person can adapt different modes of *Riyazat/exercise* according to his/her facility/necessity, which are recommended by Greek physician; they have described many modes of exercise are as following

- **Musariyat** (wrestling) [19, 20, 21, 22, 23, 24]
- **Mubatishat** (trials of strength against each other) [19, 20, 23]
- **Mulakzat** (boxing) [19, 20, 21, 23]
- **Ahzar** (running and racing) [19, 20, 21, 23, 24]
- **Musabiqat** (brisk walking) [19, 20, 21, 23, 24]
- **Zobain** (javelin-throwing) [19, 20, 21, 23] to perform total body swinging movement, upper limb strengthening, and stretching exercises [20].
- Horse riding, to perform leg swinging exercise, neck and trunk exercise and upper limb exercise [18-24].
- **Khafaq Bil Dain** (standing on toes, the arms kept raised in front of chest move forward and backward in quick succession) [19, 23].
- **Swinging** [18, 19] is a free exercise which induces relaxation to reduce a state of wasteful tension in muscles. It is also

used for shorter periods to mobilize the joints.

- ***Zoraq wa Zamariya*** (boating) beneficial for digestion [18].
- ***Mujahidazall*** (fighting one's shadow with a spear or sword) [18].
- ***Tasfeeq Bil Kafeen*** (clapping) [18, 19, 21, 22].
- ***Tafar*** (jumping) [19, 23].
- ***Soobjan*** (playing with large or small ball) [19, 23].
- ***Tabtaab bazi*** (sword-play or fencing) [19].
- Stone lifting to provide shoulder rotational movements and forearm supination and pronation [21, 22, 24].

### *Sharaiite Riyazat/principles of exercise* [14]

In the *Sharaiite Riyazat* eight principles are considered.

- ***Miqdare Riyazat*** (intensity of exercise) [19, 25].
- ***Waqte Riyazat*** (timing of exercise) [19, 25].
- ***Riyazat se pehle ki Ghiza*** (meal before exercise) [19].
- ***Riyazat karne wale ki umr*** (age of person) [19].
- ***Riyazat karne wale ka Mizaj*** (temperament of person) [19].
- ***Riyazat karne wale ki jismani halat*** (physic of person) [19].
- ***Maujooda waqt*** (present environment) [19].
- ***Aazae maoofa ki halat*** (condition of body parts) [19].

Hippocrates proposed that a person who is hunger should not do any exercise or heavy work because it produces fatigue. As one knows that the life and health depend upon food/diet like meat, chapatti, pulses, and rice etc. [19]. All foods are not digested completely. So, undigested materials are remaining as a waste; for the removal of waste *Tabiyat* plays an important role, but it does not remove it completely. Hence, waste material remains in the body and causes harm. If this waste matter gets putrefied, it produces infectious diseases retained matter becomes alter, produces *Sue Mizaj*. Sometimes, *Kammiyat* (quantity) increases and results in congestive diseases (*imtelai amraz*). If they accumulate in the particular organ causes inflammation (*waram*). These waste materials change the *Mizaj* of the *Rooh*. Thus, exercise prevents the accumulation of waste matter and it also helps in the removal of waste matter from the body to maintain the health [14, 19, 20].

### *Hidayate Riyazat /recommendations of exercise* [14].

Exercise should be according to age, temperament, occupation, body conditions, time etc. Best time for exercise is during moderate condition of body [19]. Refrain from strong exercise for diseased organs [19]. Before exercise, intestine and urinary bladder should be empty [19]. *Dalak e istedad* should be done before exercise and *Dalak e isterdad* after exercise [19, 21, 24]. It should be done after complete digestion of food [18, 19]. During heavy exercise there should be some *Lateef* (light diet) in stomach especially in summer season, and in winter there should be some *Ghaleez* (heavy diet) in stomach. One should take rest during heavy exercise [10]. Exercise should be done in morning hours [19, 21]. On empty and full stomach, exercise should be avoided. If there is excess *Hararat* (hot), *Yubusat* (dry) and *Burudat* (cold) in the body, exercise should not be done [18, 19].

### *Awqate Riyazat/Time of exercise* [14]

In *Rabi* (spring season) good time for exercise in noon. In *Saif* (summer) exercise should be done in morning, as well as in *Shita* (winter) exercise should be performed in evening [19, 21].

### *Miqdare Riyazat/quantity of exercise*

*Miqdare Riyazat* means how much exercise should be done and when it should stop (It should stop gradually: Three things should be kept in mind [19].

**Colour of the body**

Exercise should be done till the color of the skin remains shining, and if the colour is going to dull or yellow, then exercise should be stop <sup>[19]</sup>.

**Movements (*harkat*) of the body**

When the movement of the body is being performed easily exercise should be continue. If there is feeling of fatigue it should be stopped <sup>[19, 21]</sup>.

**Swelling of the organs (*aaza ka phoolna*)**

exercise should be continue till the organs swollen and sweating dried up and when the organs stop to swell and sweating continues, exercise should be stopped <sup>[19, 21]</sup>.

**Exercise of specific organs <sup>[12, 14]</sup>**

Unani physicians explicated some legend suggestions regarding specific exercise for specific organs of the body.

**Exercise of chest and respiratory system (*Aza-e- Tanaffus*)**

By lifting of heavy things, singing, speech, phonetics: Stopping of respiration for short time <sup>[19, 20, 21]</sup>.

**Exercise of ears**

Listening of melodious songs <sup>[19, 25]</sup>.

**Exercise of eyes**

One should see the beautiful sceneries, Continue looking at small things. Observation of bright objects slowly and moderately <sup>[19, 25]</sup>. Travelling with sitting in opposite direction of movement, by seeing backside up and down, and right and left; and gaze of yellow, green and sky blue colors is helpful for good vision <sup>[24, 19, 25]</sup>.

**Exercise of digestive system <sup>[12, 14]</sup>**

Wrestling and boat travelling are beneficial for digestive system <sup>[18]</sup>. Daily routine work and physical exercise play an important role in digestion of food. Voyage via ship and boat is helpful in curing of many diseases like leprosy, ascites, apoplexy, flatulence, *Baroodate Medi* etc. <sup>[19, 25]</sup>.

**Exercise in Hemiplegia**

Application of massage and exercise in hemiplegia has been mentioned in Greek, Egyptian, Arabic, Chinese and Indian medicines. Greek and Arab physicians like Hippocrates, Galen Razes and Avicenna, etc. Have mentioned about application of massage with medicated oil for the limitation of disability in the patient of hemiplegia. *Razes, Ali bin Abbas Majoosi* mentioned the use of *Roghane Qust* on paralyzed part and Vertebra <sup>[22]</sup>.

**Passive and Active Exercises in Hemiplegia <sup>[14]</sup>**

If you have hemiplegia, physical therapy is started soon after your condition stabilizes to prevent stiffening of muscles and joints. Exercises focus on stretching and strengthening the affected side. A physical therapist or caregiver may perform passive range-of-motion exercises on your upper extremities if you can't do them yourself. Upper extremity exercises may enhance your ability to perform tasks of daily living. If you are able, you can eventually do upper extremity exercises or active range-of-motion exercises on your own

**Types of Exercises in hemiplegia <sup>[14]</sup>**

A physical therapist or caregiver might help you perform head and neck exercises, shoulder and elbow rotations and movements, wrist rotations and hand exercises that will help

you gain dexterity and movement in your affected hand and fingers. In addition, part of your physical therapy might include exercises to enhance upper extremity strength.

**Back pain exercises <sup>[14]</sup>**

**Back pain** is pain felt in the back. Episodes of back pain may be acute, sub-acute, or chronic depending on the duration. The pain may be characterized as a dull ache, shooting or piercing pain, or a burning sensation. The pain may radiate into the arms and hands as well as the legs or feet, and may include tingling, weakness or numbness in the legs and arms. The most common area of pain is the lower back, or lumbar area. The pain may originate from the muscle, nerves bones, joints or other structures in the spine Internal structures such as the gallbladder and pancreas may also to the back.

Exercises can be an effective approach to reducing pain, but should be done under supervision of a licensed health professional. Generally, some form of consistent stretching and exercise is believed to be an essential component of most back treatment programs. However, one study found that exercise is effective for chronic back pain, but not for acute pain.

**Exercises need in Obesity <sup>[13, 14, 26-28]</sup>**

**Obesity** is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and/or increased health problems. In Western countries, people are considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height, exceeds 30 kg/m<sup>2</sup>, with the range 25-30 kg/m<sup>2</sup> defined as overweight. Reducing the amount of calories in your diet will help you lose weight, but if you want to keep off the weight, you have to combine a calorie-controlled diet with regular exercise. Stable body weight is maintained by balancing energy intake, by food consumption, with energy expenditure. While metabolic systems can adjust for short term changes in equilibrium, a long term imbalance of energy intake over expenditure results in weight gain and obesity. Successful weight loss is achieved by reducing caloric intake and increasing energy expenditure. Daily physical activity which accounts for approximately 20-30% of total energy expenditure is the best way of modifying total energy expenditure. Most studies base their design on the recommended physical activity guidelines for health, 30 minutes of exercise on 5-7 days per week. A brisk walking speed will expend approximately 7 kcal/min. over 30 minutes that accumulates to approximately 210 kcal. There is 9000 kcal in 1 kg of body fat. Therefore it would take approximately 8.5 weeks to lose 1 kg of body weight if exercising five times per week. <sup>14</sup> Eating patterns and maximizing physical activity are advised concerning modest extra activity required to increase physical activity level (PAL) ratios. When possible, walking rather than driving to work should be incorporated in daily routine, since this is more likely to be sustained. Swimming may be advised if necessary

Hippocrates, the most famous Herodicus student, wrote on the beneficial effects of the exercise and its value in decreasing obesity. The Unani physician-prescribed exercise as it removes laziness and heaviness of body and it makes the body active and light in weight.

They said that exercise opens the pore of the body and then there is the removal of waste products from the body. When pores open there is increased sweating and hence it helps lose

weight. So they were aware of the benefits of exercise in obesity.

Moderate-intensity physical activity is any activity that increases your heart and breathing rate, and may make you sweat, but still allows you to hold a normal conversation.

Examples include:

- fast walking
- jogging
- swimming
- tennis
- using a step-trainer (or similar) at the gym

#### **Exercise therapy in diabetes** [13, 14, 27, 29]

Most patients with type 2 diabetes are overweight or obese, with a high waist to hip ratio, while most obese patients are insulin resistant, though not as severe as those with type 2 diabetes. Both groups usually have altered lipid metabolism with high triglycerides, LDL, total cholesterol and low HDL cholesterol and an increased risk of cardiovascular diseases. Exercise has multiple positive benefits, including cardiovascular risk reduction, reduced blood pressure, and maintenance of muscle mass, reduction in body fat and weight loss. For individuals with type 1 or type 2 DM, exercise is also useful for lowering plasma glucose and increasing insulin sensitivity. In patients with diabetes, the ADA recommends 150 min/week (distributed over at least three days) of moderate aerobic physical activity with no gaps longer than two days. The chosen aerobic exercise should use large muscle groups. Running, walking, biking and swimming are excellent activities for most people. Unani physicians recommended these exercises with the name of *Ahzaar* (running), *Musaabqat* (brisk walking) and riding in the form of horse riding, camel riding [13, 18]. The exercise regimen should also include resistance training which was described by Unani physicians with the name of *Mubaatshat*.

People who do regular exercise, low level of insulin is sufficient to control their blood glucose level as exercise decreases the requirement of insulin in people.

Food intake and insulin doses should be adjusted based on the intensity and duration of anticipated exercise because these patients are prone to either hyperglycaemia or hypoglycemia [20]. Unani physicians recommended exercise as it strengthens nerves so that it may prevent neuropathic diseases related to diabetes [19]. Regular aerobic exercise improves blood circulation and lowers blood glucose levels. Exercise also strengthens the heart and helps maintain an ideal body weight. The chosen aerobic exercise should use large muscle groups. Running, walking biking, and swimming are excellent activities for most people. The frequency, type, and duration of exercise depend on the individual's age, treatment goals, and physical ability

#### **Exercise in cardiovascular diseases** [13, 30, 31]

The fact that the risk of cardiovascular disease is significantly greater in obese and type 2 diabetes patients has been well established. In addition to metabolic changes relating to weight loss and insulin resistance, exercise also confers many benefits to the cardiovascular system.

**Blood volume changes:** The first detectable effect of sustained exercise is an increase in circulating blood volume of around 10-20% (500-1000 ml), which can be seen almost to its full extent after even a two-hour aerobic training bout and is sustained throughout a period of regular training.

**Blood pressure control:** Regular exercise leads to a reduction in blood pressure by improving arterial dilatation. This response occurs after only a few weeks of exercise. Exercise, therefore, is increasingly favoured as a therapeutic aid for patients with hypertension.

#### **Structural and functional adaptations of vasculature:**

With regular exercise, structural and functional changes in the vasculature are observed, which enhances oxygen delivery and uptake during exercise. It induces cellular reorganization and endothelial mediated alterations in gene expression of several substances. Additional structural adaptations include angiogenesis and arterial and venous remodelling.

Regular exercise increases oxygen delivery, uptake and utilization in the muscle cells. Cardiac muscle responds to exercise similarly to skeletal muscles. It increases the force of muscular contraction and therefore, the volume of blood ejected by each beat. By improving arterial dilatation and blood pressure, it reduces the stress placed on the heart and reducing the risk of myocardial disease. Unani physicians recommended exercise in cardiovascular diseases like *khafqaan barid* and *rutoobat-e-qalb/ikhtilaj-e-qalb* as it provides *taskheen* to the heart.

#### **Exercise for stress and anxiety** [14]

Exercise is also considered vital for maintaining mental fitness, and it can reduce stress. Studies show that it is very effective at reducing fatigue, improving alertness and concentration, and at enhancing overall cognitive function. This can be especially helpful when stress has depleted your energy or ability to concentrate. When stress affects the brain, with its many nerve connections, the rest of the body feels the impact as well. Or, if your body feels better, so does your mind. Exercise and other physical activity produce endorphins — chemicals in the brain that act as natural painkillers — and also improve the ability to sleep, which in turn reduces stress. Regular participation in aerobic exercise has been shown to decrease overall levels of tension, elevate and stabilize mood, improve sleep, and improve self-esteem. About five minutes of aerobic exercise can begin to stimulate anti-anxiety effects. Hippocrates wrote about the effects of exercise in improving mental attitude.

#### **Relationship of Exercise to Anxiety Disorders** [14]

Stress and anxiety are a normal part of life, but anxiety disorders, which affect 40 million adults, are the most common psychiatric illnesses in the U.S. The benefits of exercise may well extend beyond stress relief to improving anxiety and related disorders. Psychologists studying how exercise relieves anxiety and depression suggest that a 10-minute walk may be just as good as a 45-minute workout. Some studies show that exercise can work quickly to elevate depressed mood in many people. Although the effects may be temporary, they demonstrate that a brisk walk or other simple activity can deliver several hours of relief, similar to taking an aspirin for a headache. Science has also provided some evidence that physically active people have lower rates of anxiety and depression than sedentary people. Exercise may improve mental health by helping the brain cope better with stress. In one study, researchers found that those who got regular vigorous exercise were 25 percent less likely to develop depression or an anxiety disorder over the next five years.

### Exercise for cerebral palsy

One of the mainstay therapy for cerebral palsy treatment is physical therapy. Physical therapy is used to decrease spasticity, strengthen underlying muscles, and teach proper or functional motor patterns. A cerebral palsy treatment that is used for fine motor skills and daily living activities is known as occupational therapy. Occupational therapy is used much in the same way as physical therapy, primarily focusing on the hands and arms. Another cerebral palsy treatment is exercise therapy which can greatly enhance the mindset of the patient and give them a great sense of accomplishment. Whether indoor or outdoor, exercise increases the amount of oxygen delivered to the brain and can alleviate stress. Swimming can be quite beneficial during cerebral palsy treatment, preferably in a warmer than average pool. Movement performed in water will be easier and more effective at exercising muscles. Hippo therapy also known as horseback riding, involves specially trained physical and occupational therapist in treatment for patient with movement dysfunction. Hippo therapy uses the influence of the horse over the patient, rather than patient controlling the horse. Throat and tongue muscles may be affected as well, so speech and language therapy is available as cerebral palsy treatment as well. Speech and language therapy is used for spoken and alternative types of communication, such as sign language or computers.

### Physical therapy for rheumatoid arthritis <sup>[14]</sup>

The goal of it is to keep you moving. It uses exercise and other methods to stimulate muscles, bones, and joints. The result is more strength, tone, and overall fitness. If you have moderate or advanced rheumatoid arthritis, physical therapy can help you keep or improve your strength and flexibility.

### Exercises for woman with rheumatoid arthritis

- **Hamstring stretch:** Lay flat on your back and slowly draw one knee into your chest. Hold for 8 to 10 seconds, and then return to starting position. Repeat 3 to 6 times, and then switch legs.
- **Chest stretch:** Place your forearm flat against a wall. Keep your arm at a 90-degree angle and gently lean forward until you feel a stretch through the upper portion of your shoulder and chest. Hold for 8 to 10 seconds, and then return to starting position. Repeat 3 to 6 times.
- **Row with resistance band:** Wrap a resistance band around a sturdy object in front of you. Hold the ends of the band in each hand with your arms straight out in front of you, palms facing each other. Make sure the band is tight. Contract your upper back muscles and pull the band toward you, bending your elbows, keeping your shoulders relaxed. Slowly return to starting position and repeat 10 to 15 times.
- **Chest press with resistance band:** Wrap a resistance band around a stable object behind you. Hold the ends of the band taut in each hand, palms down, with the band on top of your arms. Squeeze your chest and press your arms forward at shoulder level. Bring your arms to full extension, taking not to lock your elbow joints. Return to starting position and repeat 10 to 15 times.
- **Slow step up:** Place a step board or a low platform in front of you (if your home has stairs, use the bottom step). Stand about 12 to 24 inches from the board, then step up with your right foot and lift your left knee up slowly. Return to start position. Repeat on the right side 10 to 15 times, and then switch sides.

- **Walking:** Walking is a great form of cardiovascular exercise that you can do almost anywhere. Start out slow on a flat course. As you build up strength and endurance, increase your time and even try some small hills.
- **Recumbent bike or elliptical:** If you have access to a gym, the recumbent bike or elliptical trainer provides a great low-impact workout. Start with 10 to 15 minutes 2 to 3 days a week.
- **Group fitness classes:** A low-impact fitness class is a great way to have fun and work out at the same time. Check the class schedule at your local gym and talk with a trainer or instructor to decide which class would be the best for you. If available, water aerobics is a great option for those with joint pain.
- **Listen to your body:** It's important to start out slow and build up strength as you goes to avoid discomfort and injury. If your joints are inflamed or you're not feeling well, rest and drink plenty of water. Once you feel better and are able to resume activity, listen to your body and talk to your doctor if there are any lingering issues.

### Recommended Exercise in pregnancy <sup>[14]</sup>

*Abu-Bakr Zakariya Razi* has described in his book “*Kitab-ul-Hawi*” that during pregnancy there is increase in waste products and pregnant women usually suffer from nausea, palpitation and loss of appetite etc. He recommends *Chahal Qadmi* (walking) for these ailments <sup>[34]</sup>. *Hkm. Mohd. Saharanpuri* has mentioned in his book “*Hayat-e- Hubli*” that *Chahal Qadmi* (walking) and *Khafif Riyazat* (moderate exercise) is beneficial in various ailments of pregnancy <sup>[35]</sup>. It is currently recognized that habits adopted during pregnancy could affect woman's health for the rest of her life. Hence regular exercise is promoted for its overall health benefits. The American College of Obstetricians and Gynecologists (ACOG) have also recommend exercise for maternal health. In January 2002 the ACOG published new recommendations and guidelines for exercise during pregnancy and the postpartum period. The Canadian Diabetes Association<sup>37</sup> and the American Diabetes Association suggests, “women without medical or obstetrical contraindications be encouraged to start or continue a program of moderate exercise as part of treatment for GDM”.

### Recommended Exercise in pregnancy <sup>[14]</sup>

- Fitness walking
- Jogging (mild)
- Swimming
- Aqua-natal classes
- Low-impact aerobics
- Pilates
- Yoga and stretching

### Benefits of Exercise to the Pregnant Woman <sup>[14]</sup>

- Improved circulation for mother and baby (which helps prevent constipation, hemorrhoids, varicose veins, leg cramps and swelling of ankles).
- Improves digestion.
- Reduces common aches and pain including backaches.
- Stimulates the innate heat and makes the body feel lighten by producing mild heat.
- Increases energy and stamina<sup>22</sup> (regular exercise improves CVS which can help sustain energy levels).
- Limits the pregnancy related increase in peripheral insulin resistance.
- Facilitates a general feeling of well-being

- Improves mental wellbeing
- Maintains or develops optimal posture.
- Promotes pelvic floor strength.
- Maintain or improve strength and/or flexibility.
- Possible control of excess weight gain.
- Promotes better sleep
- Enhances self-images and confidence.
- Lift spirits and balanced mood.
- Increases body awareness.
- A beneficial effect on the course and outcome of labour.

### Conclusion

Physical fitness appears to buffer against stress-related diseases owing to its blunting/optimizing effects on hormonal stress-responsive systems, such as the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. Another mechanism whereby regular exercise may confer resilience is through minimizing excessive inflammation. Chronic psychological stress, physical inactivity and abdominal adiposity have been associated with persistent, systemic, low-grade inflammation and exert adverse effects on mental and physical health. It is now thought that inactivity leads to toxic levels of unused oxygen and a high energy state in a mitochondrion. This creates more free radicals that cause damage to the mitochondrion and, therefore, the cell. Damaged mitochondrion creates inflammation, faster aging and leads to most long term conditions. Exercise, therefore, increases the resilience of every cell and this is done by anti-oxidants and these are stimulated by physical activity.

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