



## Exercise Biochemistry Review

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### Survey and Exercise Prescription Formulation on the Physical Fitness of 36-45 years Old Female Teachers

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**Objective** Chinese scholars believe that physical fitness means that individuals have sufficient energy to do daily work (study) without fatigue, spare no effort to enjoy the fun of leisure life, and have the ability to adapt to emergencies. According to the American academy of sports medicine, physical fitness includes "fitness for health" and "fitness for skill". Healthy fitness includes: cardiovascular fitness, muscle fitness, flexibility fitness and body fat percentage. In this study, female teachers aged 36 to 45 from Taiyuan institute of technology were tested for fitness test based on body composition, bone density and cardiovascular fitness to understand the fitness status of its health body and analyze its possible causes in combination with the questionnaire. The health risk analysis and the exercise prescription of improving health fitness were given to different teachers.

**Methods** The Research uses the questionnaire survey method and the interview method to investigate the teacher's life rule, the experimental method to test the female teacher's body composition, the bone density, and the cardiovascular fitness. The main indicators are as follows: (1) Body composition index (AcmeWay BH-380 Body composition analyzer, China): height, weight, body mass index, body fat rate, fat volume, visceral fat content. (2) Bone mineral density index (GE Achilles EXP II, America): T value, Z value, bone strength index. (3) Cardiovascular Fitness Index (A&D TM-2656VP, Japan): systolic and diastolic pressure.

**Results** The body mass index of female teachers in this age range is  $25.8 \pm 2.6 \text{ kg/m}^2$ . Body mass index is in the normal value of high close to the overweight threshold relative standard value ((normal:  $18.5 \leq \text{BMI} < 24$ ; overweight:  $24 \leq \text{BMI} < 28$ ; obesity:  $28 \leq \text{BMI} < 32$ ; very fat:  $32 \leq \text{BMI}$ ). female body fat rate is  $31.6 \pm 4.5\%$ , which is fat too high. (Fat too high: 30-35%; obese: women more than 35%). The T value of Bone mineral density is  $0.53 \pm 1.4$ , which is in the normal range, but behind the relative standard value (the normal healthy skeleton:  $-1 < T$ , Bone mass is less or lower:  $-2.5 < T \text{ value} < -1$ , osteoporosis: T value  $< -2.5$ ). Systolic pressure is  $121.7 \pm 6.6 \text{ mmHg}$ ; Diastolic blood pressure value is  $80.0 \pm 4.4 \text{ mmHg}$ . The blood pressure is in the range of the age standard value (36-45 years old, female systolic pressure  $< 122 \text{ mmHg}$ , diastolic pressure  $< 77 \text{ mmHg}$ ), but all is the normal high range.

**Conclusions** The BMI of female teachers aged 36 to 45 at Taiyuan institute of technology is within the normal range but it is close to the threshold of overweight and has health risks, which should be paid attention to. This people has High fat rate; The T value of bone mineral density indicates that it belongs to normal and healthy bones, but it is close to the threshold of bone oligopolies, and there is a certain risk. Blood pressure of cardiovascular fitness is in the high range of this age standard, indicating a certain risk of cardiovascular fitness.

**Suggestions and exercise prescriptions:** The main reasons for the questionnaire analysis are: (1) The high pressure mainly from work, life, psychology and society. (2) Bad living habits: some teachers have irregular diet, poor sleep quality and unpunctuality. (3) Lack of physical exercise: they often engaged in copywriting work, with few times of exercise and short time of each exercise, and their health consciousness is shallow. (4) Lack of scientific planning and guidance for physical exercise, and be in a state of blind exercise.

It is suggested that college teachers should carry out assessment and analysis of body composition, bone density and cardiovascular fitness at least once every 3 months, so as to timely find out potential or existing problems, and then take targeted measures to improve the health awareness of

college teachers and reduce the risk of disease. Schools should pay more attention to the health of college teachers. The corresponding exercise prescription is formulated for each teacher, and the core exercise goal is to improve the fitness level of healthy body. The exercise method is a combination of aerobic exercise, total body strength, flexibility exercise and other exercise items. Please do warm up before exercise and relax after exercise.

(1) Aerobic exercise: rhythmic gymnastics, skating, jogging, badminton and other sports can be carried out, and the target rate is kept at 100-135 times/min. Subjective feeling is best if you feel a little bit hard, as you can feel the body heat, breathing faster.

(2) Body strength training: Vibration can be prone leg, reverse abdominal muscle contraction, the frog sat, sit-ups; Hand strength exercises for lower abdomen, arm and back, leg and shoulder dumbbells. Use your weight load to hold in a relatively fixed position for 3-10 seconds. The five movements are one group, 15-20 times each.

(3) Flexibility exercises: hurdling posture to stretch, Hurdle stretch, Bow forward, Hip stretch, Stretch your waist and legs and other equitant stretching. The intensity of the exercise is to feel the muscles being stretched until they feel they are being stretched. Each movement is held at a fixed position for another 10-30 seconds. If you feel uncomfortable, you need to ease the tension. Be careful not to use too much or too much force in practice to prevent muscle strain.