**Appendix 1. Control written information**

The energy we utilize when exercising is supplied via a two-step reaction: i) without using oxygen—a reaction through an anaerobic energy supply mechanism—wherein energy supply occurs, followed by ii) a reaction via aerobic energy supply mechanism using oxygen.

Because the anaerobic energy supply mechanism has a higher reaction rate than the aerobic energy supply mechanism, in high-intensity exercises with high energy consumption per hour (or the energy consumption rate), the energy supply by the former reaction is predominant, and the latter reaction, which progresses in the next stage, is unable catch up.

High-intensity exercise that cannot catch up with such an aerobic energy supply reaction is called as an anaerobic exercise (or anaerobics). Resistance training (strength training) that exerts great power in a short time is classified into the group of anaerobic exercises. The term “anaerobic” does not mean that those exercises are done without breathing.

Although anaerobic exercise can continue only for a short time, fast muscles (type II fiber; pale muscles) are particularly used among the muscle fibers because they can demonstrate great force and fast exercise. However, fast muscles are prone to atrophy with age. Because fast muscles are in action during anaerobic exercise, you can increase your muscle mass and muscular strength of the fast muscles regardless of your age by performing anaerobic exercises. Therefore, it is clear that there is a relationship among the muscle mass/muscle strength of fast muscles, presence or absence of a disorder, and risk of falling. Thus, anaerobic exercise is an indispensable exercise for the maintenance of health and physical fitness.

To prevent lifestyle-related diseases, it is necessary to maintain a certain level of physical strength. Physical strength is strongly correlated with muscular strength, basal metabolism, and cardiovascular functions. In anaerobic exercises, it is possible to mainly improve the muscular strength and basal metabolism. Aerobic exercise is effective for improving the rate of fat burning and cardiovascular function, but habitually conducting medium- to high-intensity anaerobic exercise for ≥3 days per week can be expected to improve the fat burning and cardiovascular functions.

**Appendix 2. Intervention written information**

**Effects of anaerobic exercises (strength training)**

**—Essential for the maintenance of health and physical strength and for the prevention of lifestyle-related diseases**

**■How energy is created**

The energy needed to move the body is created in 2 stages:

First stage: Without using oxygen

Second stage: Using oxygen

The characteristic of the first stage is fast speed. In contrast, the speed is slow in the second, oxygen-using stage. Therefore, when using a lot of energy during a short intense exercise, energy is created mainly in the first stage (without oxygen).

**■What is anaerobic exercise?**

Thus, an exercise in which energy is supplied via a method that does not use oxygen is called as an anaerobic exercise (or anaerobics). A typical type of anaerobic exercise is strength training. Although it is called an “anaerobic” exercise, it does not mean that you do not breathe during this exercise.

**■It is essential for maintaining health and physical strength**

When we perform anaerobic exercise, we use our fast muscles. Fast muscles are the muscle fibers that are involved in creating a large force or for moving fast. Fast muscles weaken with age. When the fast muscles become weak, injuries and falls occur easily. However, by performing anaerobic exercise, you can train your fast muscles regardless of your age. Anaerobic exercises are thus essential for maintaining your health and physical strength.

**■It is also effective for preventing lifestyle-related diseases**

Anaerobic exercise is also effective for preventing lifestyle diseases. Muscular strength, basal metabolism, and cardiovascular function are involved in preventing lifestyle-related diseases. Through anaerobic exercise, it is possible to increase the muscular strength and basal metabolism. Furthermore, by regularly performing medium- to high-intensity anaerobic exercise at least 3 days in a week, it is possible to reduce body fat and strengthen cardiovascular functions, such as the functions of the heart and blood vessels.