

Exercise Adherence

Clark, J. W. (1986). *The role of self motivation in exercise adherence.*

Define Exercise Adherence

- **Come up with your own definition of exercise adherence**

- **Adherence refers to maintaining an exercise regimen for a prolonged period of time following the initial adoption phase**

Rehab adherence

- **Adherence refers to maintaining an rehab regimen for a prolong period of time following injury and/or surgery.**

- **Adherence is:**
 - 1. Voluntary**
 - 2. Self-regulated**
 - 3. Largely a psychological issue**

Who will Exercise, why, or for how long

- **Survey's have consistently shown that people participate in PA for two main reasons**
 - Health benefits
 - Enjoyment

At a given time about 40% of Americans do not exercise during leisure time, another 40% are active on levels probably too low and infrequent for fitness and health gains, while just 20% exercise regularly and intensely enough (1985)

- **PUBLIC HEALTH interest in exercise adherence has grown exponentially in the past several years.**
- **-published articles**

- **75% of population dropout of exercise in 3 years**
- **20-80% dropout in dieting**
- **80% do not achieve desired weight goals**
- **20-50% fail to keep rehab appointments**
- **Only 30% of Canadian population meets the recommended physical activity guidelines set by CDC or ACSM**

- **What is the difference between physical activity and exercise?**

- **How can the study of exercise adherence help the fitness specialist?**
- **How can the study of rehab adherence help the physical therapist or athletic trainer?**

- **Adherence will come through :**
 - I. Understanding and modifying one's behavior**
 - II. Influencing public and personal opinions**
 - III. Promote Exercise Self-efficacy**
 - IV. Motivating people**
 - V. Changing the client's intention to exercise or to rehab**

Lack of fitness costs money

- **100,000 deaths from CV disease per year
(Estimated costs = \$35.1 billion)**
- **75 million people have lower back problems
(Estimated cost = \$10 million)**
- **Total health care costs = \$225 billion**
- **Total workers comp = \$225 million**

RPE

- **The use of the perceived exertion scale to prescribe and monitor exercise is discussed as a strategy to increase adherence to training programs...**
- **Why?**

Motivational Strategies

- **List strategies to increase adherence:**
 - In youth
 - In adults
 - In older adults

Case Study

- **Jane is a 24 year old sedentary young adult who feels that they are skinny and do not need to exercise.**
- **You are now a fitness professional (in some regard), describe how you are going to increase their motivation to exercise/become physically active**
- **Share strategies with other groups**

- **The acquisition of habits of increased PA has been described as three stage process:**

- 1. The decision to initiate exercise**
- 2. Early habit acquisition**
- 3. Maintenance of the new behaviour**

- **Voluntary vs. in-voluntary**
 - Describe different examples for each

- **What are the reasons why people exercise?**

Reasons to Exercise

- **Improved physiological health/physical fitness**
- **Enhanced physical appearance**
- **Improved psychological/emotional health**
- **Improved social relations**

- **What prevents people or you from exercising?**

Barriers to PA

- **Convenience/availability**
 - Accessibility and convenience are both necessary if PA is to become a popular leisure-time activity
- **Environmental/ecological factors**
- **Physical limitations**
- **Lack of time***
- **Boredom/lack of enjoyment**
 - Intrinsic interest in or enjoyment of an activity is very important to long-term involvement in that activity

Is PA a therapy?

- **Chronic physical activity positively influences health**
- **The skeletal system**
 - Bone density in youth**
 - Likelihood that bone mineral density will be retained in older adults.**
- **The muscle system**
 - Hypertrophy**
 - Strength and endurance**
 - Capillarization & maximal blood flow.**

Sedentary Lifestyles Across the Globe

- **Percentage of sedentary adults in each country:**
- **Australia: 15 percent**
- **England/Scotland: 20-26 percent**
- **United States: 38 percent**
- **Canada: 56 percent**

- **Are most people who live in Canada aware of the health benefits associated with a active lifestyle or from being physically fit?**

Conclude

- **That exercise and/or rehabilitation adherence is a major concern for anyone who works in fitness or rehabilitation setting.**
- **The best designed fitness or rehabilitation programs will succeed or result in a higher level of exercise or rehabilitative adherence if the fitness or rehabilitation specialist is aware of or addresses the psychological, environmental, and social factors related to the client's maintaining of an exercise or physical activity regiment.**

- **Break 10 min**

chapter

20

Program Design and Technique for Aerobic Endurance Training

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Designing an Aerobic Endurance Program

- **Step 1: exercise mode**
 - Exercise mode is the specific activity performed by the athlete: cycling, running, swimming, and so on.
 - The more specific the training mode is to the sport, the greater the improvement in performance.

(continued)

Designing an Aerobic Endurance Program *(continued)*

- **Step 2: training frequency**
 - Training frequency is the number of training sessions conducted per day or per week.
 - The frequency of training sessions will depend on the interaction of exercise intensity and duration, the training status of the athlete, and the specific sport season.

(continued)

Designing an Aerobic Endurance Program *(continued)*

- **Step 3: training intensity**
 - Adaptations in the body are specific to the intensity of the training session.
 - High-intensity aerobic exercise increases cardiovascular and respiratory function and allows for improved oxygen delivery to the working muscles.
 - Increasing exercise intensity may also benefit skeletal muscle adaptations by affecting muscle fiber recruitment.

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Designing an Aerobic Endurance Program *(continued)*

- **Step 3: training intensity**
 - Heart rate
 - The most frequently used method for prescribing aerobic exercise intensity

Designing an Aerobic Endurance Program *(continued)*

- **Step 3: training intensity**
 - Ratings of perceived exertion scales
 - Can be used to regulate intensity of aerobic endurance training across changes in fitness level
 - May be influenced by external environmental factors

TABLE 20.2 Rating of Perceived Exertion (RPE) Scale

Rating	Description
1	Nothing at all (lying down)
2	Extremely little
3	Very easy
4	Easy (could do this all day)
5	Moderate
6	Somewhat hard (starting to feel it)
7	Hard
8	Very hard (making an effort to keep up)
9	Very very hard
10	Maximum effort (can't go any further)

Reprinted, by permission, from NSCA, 2012, *Aerobic endurance training program design*, by P. Hagerman. In *NSCA's essentials of personal training*, 2nd ed., edited by J.W. Coburn and M.H. Malek (Champaign, IL: Human Kinetics), figure 16.1, 395.

Designing an Aerobic Endurance Program *(continued)*

- **Step 3: training intensity**
 - Power measurement
 - Cyclists may use power-measuring cranks and hubs to regulate exercise intensity.
 - Metabolic rate is closely related to mechanical power production.
- **Step 4: exercise duration**
 - Exercise duration is the length of time of the training session.

Key Point

- **The duration of a training session is often influenced by the exercise intensity; the longer the exercise duration, the lower the exercise intensity.**

Designing an Aerobic Endurance Program

- **Step 5: exercise progression**
 - Progression of an aerobic endurance program involves increasing the frequency, intensity, and duration.
 - Frequency, intensity, or duration should not increase by more than 10% each week.
 - When it is not feasible to increase frequency or duration, progression can occur with intensity manipulation.
 - Progression of intensity should be monitored to prevent overtraining.

(continued)

Table 20.4

TABLE 20.4 Types of Aerobic Endurance Training

Training type	Frequency per week*	Duration (work bout portion)	Intensity
Long, slow distance (LSD)	1-2	Race distance or longer (~30-120 minutes)	~70% of $\dot{V}O_2\text{max}$
Pace/tempo	1-2	~20-30 minutes	At the lactate threshold; at or slightly above race pace
Interval	1-2	3-5 minutes (with a work:rest ratio of 1:1)	Close to $\dot{V}O_2\text{max}$
High-intensity interval training	1	30-90 seconds (with a work:rest ratio of 1:5)	Greater than $\dot{V}O_2\text{max}$
Fartlek	1	~20-60 minutes	Varies between LSD and pace/tempo training intensities

*The other days of the week are composed of other training types and rest-recovery days.

Data from references 15, 24, 54, 77, and 82

Types of Aerobic Endurance Training Programs

- **Long, slow distance training**
 - Training distance greater than race distance (or 30 minutes to 2 hours)
 - Intensities equivalent to 70% of $\dot{V}O_2\text{max}$
 - Adaptations from this exercise include the following:
 - Enhances the body's ability to clear lactate
 - Causes an eventual shift of Type IIx fibers to Type I fibers
 - Intensity is lower than that of competition, which may be a disadvantage if too much LSD training is used.

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Types of Aerobic Endurance Training Programs *(continued)*

- **Pace/tempo training**
 - Intensity at or slightly above competition intensity, corresponding to the lactate threshold
 - Steady pace/tempo training: 20 to 30 minutes of continuous training at the lactate threshold
 - Intermittent pace/tempo training: series of shorter intervals with brief recovery periods
 - Objectives
 - Develop a sense of race pace and enhance the body's ability to sustain exercise at that pace
 - Improve running economy and increase lactate threshold

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Types of Aerobic Endurance Training Programs *(continued)*

- **Interval training**

- Exercise at an intensity close to $\dot{V}O_2\text{max}$ for intervals of 3 to 5 minutes. Work:rest ratio should be 1:1.
- This allows athletes to train at intensities close to $\dot{V}O_2\text{max}$ for a greater amount of time.
- It increases $\dot{V}O_2\text{max}$ and enhances anaerobic metabolism.
- Interval training should be used sparingly, and only when training athletes with a firm aerobic endurance training base.

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Types of Aerobic Endurance Training Programs *(continued)*

- **High-intensity interval training (HIIT)**
 - Uses repeated high-intensity bouts interspersed with brief recovery periods.
 - Athletes need to spend several minutes above 90% of $\dot{V}O_2\text{max}$ for an optimal stimulus.
 - May be effective for improving running economy and running speed.
 - An example for long-interval HIIT is ≥ 2 to 3 minutes at 90% $\dot{V}O_2\text{max}$, with relief bouts of ≤ 2 minutes.

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Types of Aerobic Endurance Training Programs *(continued)*

- **Fartlek training**
 - Combines other methods of training
 - Easy running ($\sim 70\% \dot{V}O_2\text{max}$) combined with hills or short, fast bursts ($\sim 85\text{-}90\% \dot{V}O_2\text{max}$)
 - Can be adapted for cycling and swimming
 - Benefits are likely to include
 - Enhanced $\dot{V}O_2\text{max}$
 - Increased lactate threshold
 - Improved running economy and fuel utilization

Key Point

- **The various types of training induce different physiological responses. A sound program should incorporate all types of training into the athlete's weekly, monthly, and yearly training schedule.**

Special Issues Related to Aerobic Endurance Training

- **Cross-training**

- A mode of training that can be used to maintain general conditioning in athletes during periods of reduced training due to injury or during recovery from a training cycle.

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Special Issues Related to Aerobic Endurance Training *(continued)*

- **Detraining**

- Detraining occurs when the athlete reduces the training duration or intensity or stops training altogether due to a break in the training program, injury, or illness.
- In the absence of an appropriate training stimulus, the athlete experiences a loss of the physiological adaptations brought about by training.

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Special Issues Related to Aerobic Endurance Training *(continued)*

- **Resistance training**

- Research is limited, but some data suggest that benefits can be derived from performing resistance training during aerobic endurance training.
- Benefits may include
 - Improvement in short-term exercise performance
 - Faster recovery from injuries
 - Prevention of overuse injuries and reduction of muscle imbalances
- It can improve hill climbing, bridging gaps between competitors during breakaways, and the final sprint.

(continued)

What is in a program

- **Pick a goal**
- **Manipulate Frequency, volume, and intensity**
- **Plan things out**
- **Make your exercise choices match your goals**

- **Training needs to be structured to manage stress and offer variety for long-term fitness improvements**
 - General fitness (what is your health related goal?)
 - Sport-specific (run a specific time in a race)

Organized training

- **Provides a sense of direction... randomized training may not provide long term results**
- **Aim is to promote long-term training, health and performance improvements**
- **Organized schemes should serve as approximate guidelines to be followed and modified by on ongoing analysis of various physiological and psychological markers of progress**
 - Need for periodic evaluation (sick, rest days, unexpected circumstances)

- **Achieved through alternations in training load (intensity, volume, and frequency) in planned periods or cycles within an overall program**
 - Macrocycle: typically constitutes an entire training year (could be up to 4 years)
 - Mesocycle: several weeks to several months (2 or more within macrocycle)
 - Microcycle: typically one week long but could last up to four weeks

Example

Activity	Duration	Intensity (Average HR)
Run 1.0KM	5:00	150BMP
Run 1.0 KM beat time	4:57	
Run 1.5K	8:30	
Run 1.5 KM beat time		
Run 2 KM		
Run 2KM beat time		
Run 2.5Km		

- **Excel spreadsheet, word document, etc.**

[illegible]

programs...