

Writing an Effective Exercise Prescription

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We'll cover...

1. Benefits of Physical Activity
2. Exercise Clearance
3. Stages of Change
4. Exercise Recommendations
5. Overcoming Challenges
6. FITT Prescription
7. Three Types of Fitness

Physical Activity in New Zealand

The 2006/07 New Zealand Health Survey found:

- 52.1% of all adults are physically active for at least 30 minutes on five or more days per week
- 9.9% adults are physically active for less than 30 minutes per week

Physical Activity in New Zealand

The 2006/07 New Zealand Health Survey found:

- 47% of children aged 5-14 years usually use active transport (e.g. walking, cycling) to get to and from school
- 64.1% of children aged 5-14 years usually watched two or more hours of television a day

Benefits of Physical Activity

Exercise and Health

Prevents and treats...

- Cardiovascular disease
- Type II Diabetes
- Hypertension
- Stroke
- Hyperlipidemia
- Osteoarthritis
- Osteoporosis
- Cancer



Barlow, C. E., Kohl, H. W., Gibbons, L. W., & Blair S. N. (1995) Physical fitness, mortality, and obesity. *International Journal for Obesity Related Metabolic Disorders*, 19(4), S41-44.

American College of Sports Medicine, American Diabetes Association. Joint Position Statement: Exercise and Type 2 Diabetes. *Medicine & Science in Sport and Exercise*. 2010, Vol 42, Issue 12:2282-2303.

Benefits of Physical Activity

- Increased energy
- Decreased stress
- Improved well-being
- Improved body image and self-esteem
- Better posture and balance
- Reconnection with the physical body
- Increased strength, stamina, and flexibility



LaForge, R. (1995). Exercise-associated mood alterations: A review of interactive neurobiologic mechanisms. *Medicine, exercise, nutrition and health*, 4(1), 17-32.

Goldfarb, A. H., and A. Z. Jamurtas. 1997. Beta-endorphin response to exercise: An update. *Sports Medicine (Auckland, N.Z.)* 24 (1): 8–16.

Exercise and Weight Management

- Moderate intensity PA of 150 to 250 min/week prevents weight gain
- 250 to 300 min/week leads to greater weight loss and enhanced prevention of weight regain
- Exercise alone is not as effective for weight loss as exercise plus a reduction in caloric intake



Appropriate Physical Activity Intervention Strategies for Weight Loss and Prevention of Weight Regain for Adults. *Med Sci Sports Exerc.* 2009;41(2):459-71.

Miller, W. C., Koceja, D. M., & Hamilton, E. J. (1997). A meta-analysis of the past 25 years of weight loss research using diet, exercise or diet plus exercise intervention. *International Journal of Obesity*, 21, 941-947.

Health at Every Size

- Exercise improves health and decreases morbidity *even without weight loss*
 - Diabetes
 - Cardiovascular Disease
- Focus on health benefits not weight loss

Thomas D, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. Cochrane Database of Systematic Reviews 2006, Issue 3.

Thompson PD, et al. Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: a statement from the Council on Clinical Cardiology [trunc]. Circulation 2003 Jun 24;107(24):3109-16.

Exercise Clearance

Exercise Clearance

Exercise clearance may be needed if:

- H/O heart condition
- Chest pain with or without activity
- Dizziness or LOC
- On medications for HTN, CAD, or other risk factors
- Orthopedic problem

Exercise Clearance

PAR-Q Physical Activity Readiness

Canadian Society of Exercise Physiology

<http://www.csep.ca/cmfiles/publications/parq/par-q.pdf>

Stages of Change

Readiness to Change

- Importance
 - Why should I change?
- Confidence
 - How will I change?



Stages of Change

Stage of change

- Precontemplation
- Contemplation
- Preparation
- Action
- Maintenance

Attitude

- “Never”
- “Someday”
- “Soon”
- “Now”
- “Forever”

Exercise Recommendations

Decrease Inactivity

- Reduce time spent in sedentary activities
 - Television
 - Computers
- Some PA is better than none



Increase Lifestyle Activity

Increase time spent on activities that provide exercise, enjoyment, and connection with others



Exercise Recommendations

Adults

- 30 minutes 5 days a week
 - 150 min. of mod-intensity or 75 min. of vigorous-intensity aerobic physical activity weekly
- Strength training 2x/week

Children

- 60 minutes per day of aerobic and strengthening activity



New Zealand Physical Activity Guidelines at <http://www.moh.govt.nz/moh.nsf/indexmh/physicalactivity>

2008 Physical Activity Guidelines for Americans at <http://www.health.gov/paguidelines/guidelines>

Bottom Line

- Exercise must be comfortable, fun, convenient, and rewarding to be sustainable
- Exercise is *not* punishment for eating!

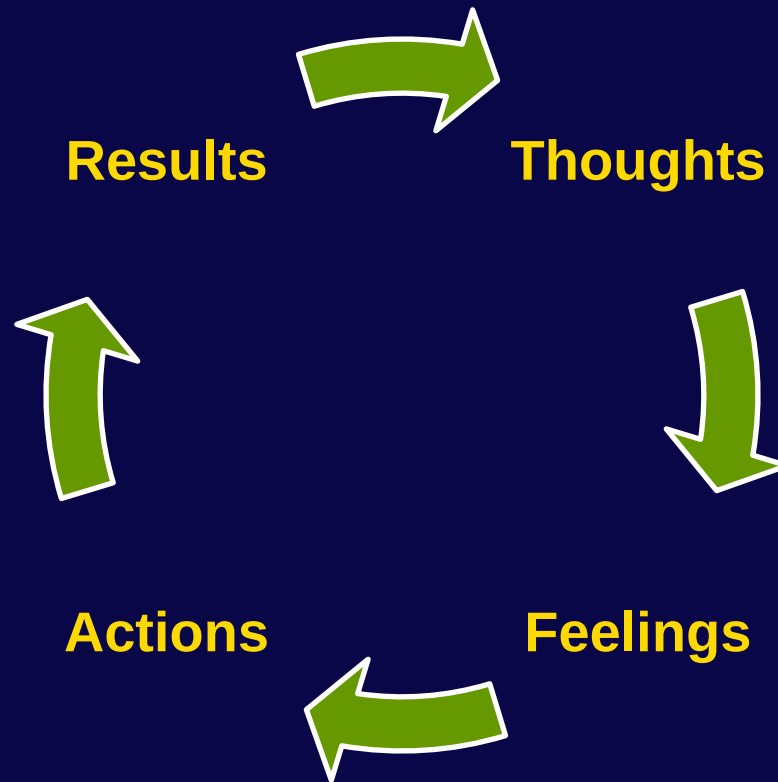


Overcoming Challenges

Overcoming Challenges

- Negative associations and attitudes
- Time
- Energy
- Discomfort
- Embarrassment
- Unrealistic expectations
- Lack of knowledge

TFAR

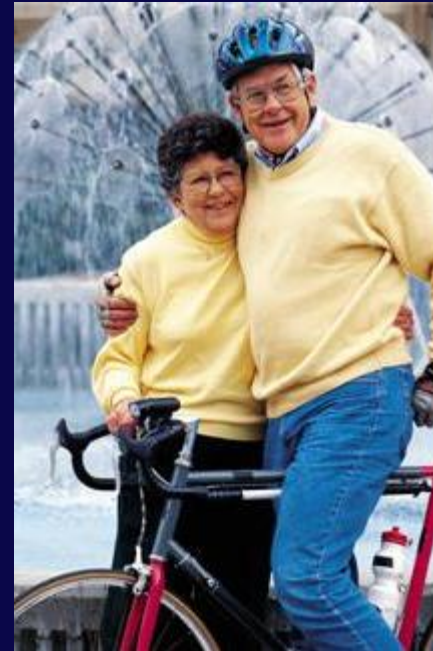


May M: *Eat What You Love, Love What You Eat: How to Break Your Eat-Repent-Repeat Cycle*.
Greenleaf Book Group Press; 2009.

FITT Prescription

FITT Prescription

- **F**requency:
How often?
- **I**ntensity:
How much effort?
- **T**ime:
How long?
- **T**ype:
What type of activity?



FITT: Frequency

- Start low and go slow - but steadily increase
- Encourage activity “most days of the week”



FITT: Intensity

- Choose activities that are comfortable
- Physical activity doesn't have to be hard or hurt to be beneficial



Jakicic, J. M., Marcus, B. H., Gallagher, K. I. (2003). Effect of Exercise Duration and Intensity on Weight Loss in Overweight, Sedentary Women. *JAMA*, 290, 1323-1330.

FITT: Intensity

- **Light intensity:** common daily activities that require little effort but contribute to total daily energy expenditure.
- **Moderate intensity:** causes a slight, but noticeable, increase in breathing and heart rate but you can still carry on a conversation.
- **Vigorous intensity:** will cause a significant increase in heart and breathing rate and you will be unable to hold a conversation.

FITT: Intensity

The “talk test” for determining exertion:

- You should be able to comfortably hold a conversation
- Intensity is too low if you can sing
- Intensity is too high if gasping for air and can barely utter a word

FITT: Intensity

Target Heart Rate Zone

$$\begin{aligned}\text{Estimated Maximal Heart Rate (MHR)} \\ &= 220 - \text{Your Age}\end{aligned}$$

Low end of THR zone = 65% of MHR = $0.65 \times \text{MHR}$

High end of THR zone = 90% of MHR = $0.90 \times \text{MHR}$

FITT: Intensity

Borg Scale of Perceived Exertion

The Perceived Exertion Scale									
Minimal		Light		Moderate		Vigorous		Maximal	
1	2	3	4	5	6	7	8	9	10

FITT: Time

Multiple short bouts of exercise are just as beneficial as one long session



JM Jakicic et al. Effects of intermittent exercise and use of home exercise equipment on adherence, weight loss, and fitness in overweight women. *Journal of the American Medical Association* 1999 282: 1554-1560.

Kesaniemi, Y. A., Danforth, E., Jensen, M. D., Kopelman, P. G., Lefebvre, P., & Reeder, B. A. (2001). Dose-response issues concerning physical activity and health: An evidence-based symposium. *Medicine and Science in Sports and Exercise*, 33, S351-S358.

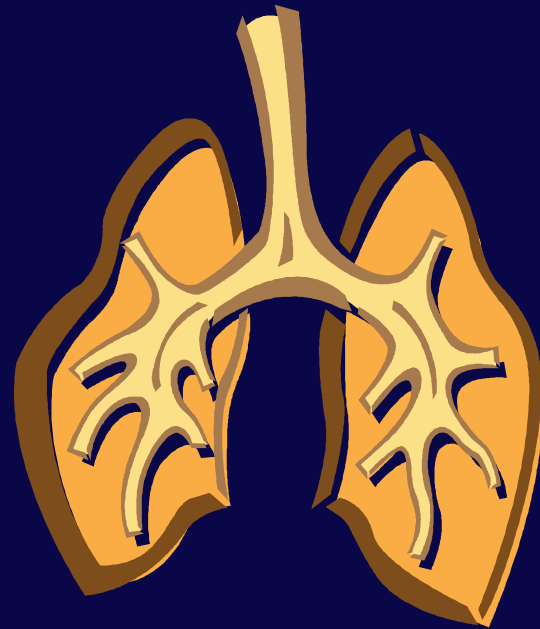
Hardman, A. E. 2001. Issues of fractionization of exercise (short vs. long bouts). *Medicine and Science in Sports and Exercise* 33 (suppl 6): S421-27; discussion S452-53.

Three Types of Fitness

FITT: Type

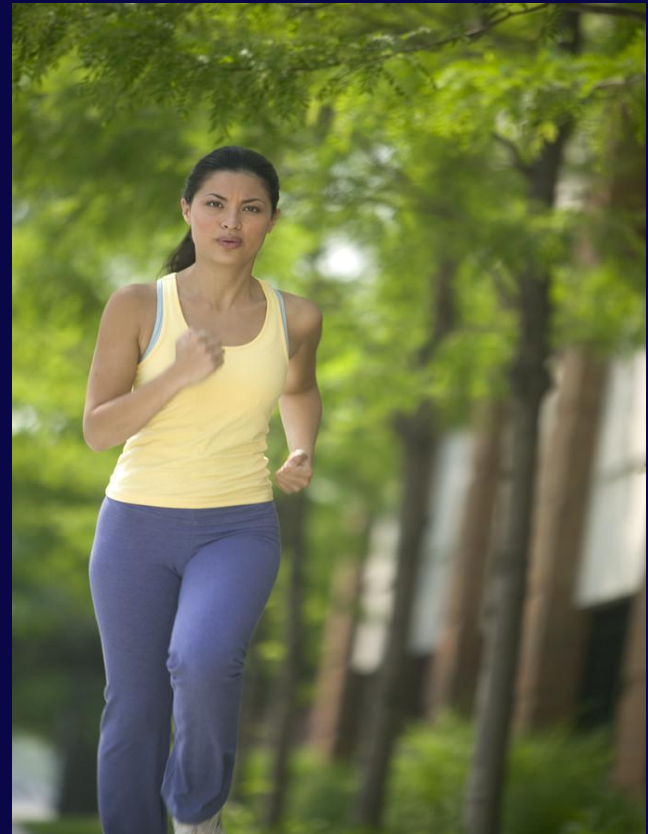
- Cardiorespiratory
- Flexibility
- Strength

Cardiorespiratory Fitness



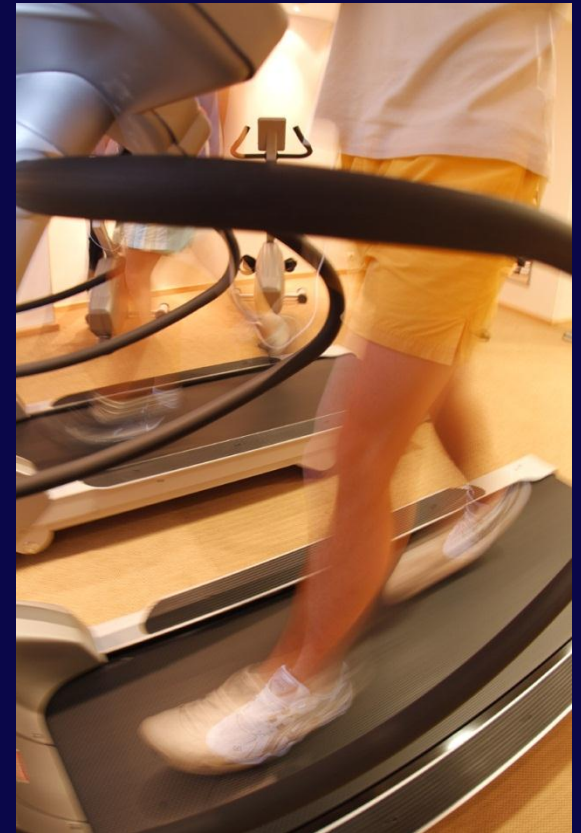
Benefits of Cardiorespiratory Activity

- Conditions cardiopulmonary system
- Lowers blood pressure and pulse
- Raises HDL
- Decreases CAD, stroke, atherosclerosis
- Increases stamina and energy
- Decreases body fat
- Improves sleep



FITT: Cardiorespiratory Fitness

- **Frequency:** 3-5 times per week
- **Intensity:**
 - 5 minute warm up
 - Then exercise at 65 – 90% of Maximal Heart Rate
 - 5 minute cool down
 - Stretching, esp. legs, back
- **Time:** 10 to 60 minutes per session
- **Type:** Walking, cycling, dancing, water aerobics, low-impact aerobics, hiking, jogging, skating, stairs, swimming, tennis, rowing, cross-country skiing



Walking is an Ideal Activity

- Ideal exercise for almost everyone
- Safe
- Anywhere, anytime
- Minimal equipment (good shoes)



Getting Started

WEEK	WARM-UP	BRISK WALK	COOL DOWN	TOTAL TIME
1	5 min	5 min	5 min	15 min
2	5 min	7 min	5 min	17 min
3	5 min	9 min	5 min	19 min
4	5 min	11 min	5 min	21 min
5	5 min	13 min	5 min	23 min
6	5 min	15 min	5 min	25 min
7	5 min	18 min	5 min	28 min
8	5 min	20 min	5 min	30 min
9	5 min	23 min	5 min	33 min
10	5 min	25 min	5 min	35 min
11	5 min	28 min	5 min	38 min
12	5 min	30 min	5 min	40 min

Pedometers

- Great motivational tool
- Worn on the waistband
- Records steps
 - Measure baseline
 - Set small goals
 - Don't talk about 10,000 steps until ready
- Not all activity can be measured in steps – but still counts



Strength Training



Benefits of Strength Training

- Improves function in daily life
- Boosts metabolism
- Creates a leaner, firmer appearance
- Decreases low back pain
- Prevents and treats osteoporosis
- Improves blood sugar metabolism
- Lowers blood pressure and cholesterol
- Appreciation for the body's capacity to become stronger



Sigal, R. J. et al. Physical Activity/Exercise and Type 2 diabetes. Diabetes Care, vol 27:10 2004.

Sigal, R. J. et al. Effects of aerobic training, resistance training, or both on glycemic control in type 2 diabetes: a randomized trial. Ann Intern Med. 2007 Sep 18;147(6):357-69.

Metter, J. L, et al. Muscle quality. II. Effects of strength training in 65- to 75-yr-old men and women. J Appl Physiol 86:195-201, 1999.

One Push Up Principle



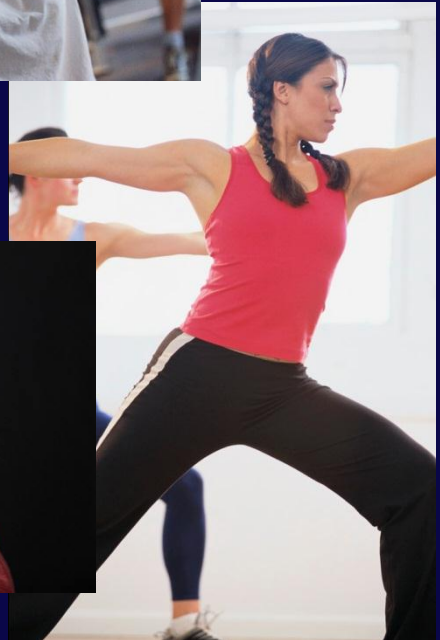
FITT: Strength

- **Frequency:** 2-3 times per week
- **Intensity:** 2-3 sets of 8-20 reps
- **Time:** 20-30 minutes per session
- **Type:** Resistance against gravity or rubber band or tubing, core strengthening activities, weight training with free weights or machines



FITT: Type of Strength Activities

- Lifting body weight: sit-ups or push-ups
- Pushing against an immobile object
- Moving against the resistance of rubber tubing or a band
- Lifting weights
- Using resistance-type exercise machines
- Doing strength exercises using a stability ball (provides support and builds core strength)



Flexibility



Benefits of Flexibility

- Decreases tension and stiffness
- Increases range of motion
- Promotes blood flow and nutrients to tissues
- Improves function in daily life
- Reduces risk of injury
- Lessens soreness after exercise
- Improves posture and balance
- Decreases back pain
- Feels good!



FITT: Flexibility

- **Frequency:** 2-3 times per week, after exercise
- **Intensity:** Gentle, comfortable, relaxing
- **Time:** 15 seconds to 20 minutes; hold each stretch
- **Type:** Post workout stretches, class, yoga



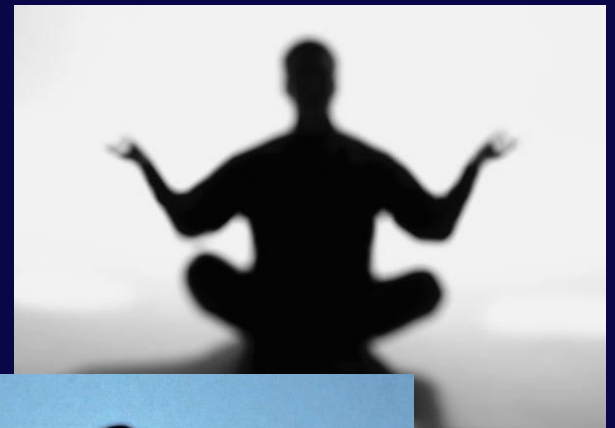
Stretch Yourself

- Warm-up before stretching; don't stretch cold muscles unless you are doing minor wake-up type stretches
- Hold the stretch; don't bounce
- Listen to your body
- Take deep breaths; relax further during the exhale



Yoga

- Yoga is for all ages and fitness levels
- Many stretches are really yoga postures
- Improves flexibility, strength, balance and focus
- Requires simple tools:
 - Non-slip mat
 - Yoga strap
 - Yoga block



Resources

GRx - Green Prescription



[http://www.moh.govt.nz/moh.nsf/indexmh/
greenprescription](http://www.moh.govt.nz/moh.nsf/indexmh/greenprescription)

Resources



www.ExerciseIsMedicine.org

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