Module 6 Exercise Recommendations to People with Hypertension (Adopted from Department of Health Central Health Education Unit Exercise Prescription 2012 Edition)

1. Effect of Exercise

Epidemiological studies suggest that regular physical activity may be beneficial for both prevention and treatment of hypertension, to enable weight loss, for functional health status, and to diminish all-cause mortality and risk of cardiovascular disease. Cross-sectional studies of select populations from China and other Eastern populations have confirmed the presence of a strong association between physical inactivity and an adverse heart disease risk factor profile. In Japanese men, duration of walk-to-work and leisure-time physical activity was significantly associated with a reduction in the risk for incident hypertension. A meta-analysis of randomized controlled trials concluded that dynamic aerobic endurance training reduces resting systolic and diastolic blood pressures by 3.0/2.4 mmHg, and daytime ambulatory blood pressure by 3.3/3.5 mmHg. The reduction in resting blood pressure was more pronounced in the hypertensive group (-6.9/ -4.9 mmHg) than in the normotensive group (-1.9/-1.6 mmHg). Even moderate levels of exercise lowered blood pressure, and this type of exercise also reduced body weight, body fat and waist circumference. Dynamic resistance exercise can also decrease resting blood pressure by 3.5/3.2 mmHg.

2. Recommendations for Exercise Prescription

The following table summarises the exercise prescription that is recommended for patients with hypertension in general.

Regular physical activity of even lower intensity and duration, however, has been shown to be associated with about a 20% decrease in mortality in cohort studies. Individuals engaging in resistance exercise should seek guidance by a trained professional, for appropriate machine adjustment, selection of specific exercises, appropriate initial exercise prescription, and subsequent exercise progression. Resistive isotonic activities, when done as the only form of exercise training, are not recommended for lowering blood pressure in hypertensive patients. An exercise prescription for achieving and maintaining flexibility, such as proper stretching for all the major joints, may be advised after a thorough warm-up and during the cool-down period.

Physical Activity Profile	Recommendations*
Frequency	• Perform aerobic exercise preferably all days of the week. • Supplemented by resistance exercise twice to thrice weekly on nonconsecutive days.
Intensity	• Aerobic exercise should be at least at moderate intensity (e.g. brisk walking), corresponding approximately to 40-60% of maximal aerobic capacity (VO2max). Relatively, moderate-intensity activity could be expressed as a level of effort of 5 or 6 on a scale of 0 to 10 (where 0 is the level of effort of sitting, and 10 is maximal effort) or 50–70% of maximum heart rate. • Resistance exercise should be at moderate intensity, which could be expressed as 50-70% of 1-repetition maximum (1-RM– maximum amount of weight one can lift in a single repetition for a given exercise).
Time	• Perform 30 to 60 mins per day of aerobic exercise continuously or intermittently in bouts of at least 10 mins accumulated to total of at least 30 mins per day. • Each session of resistance exercise should minimally include 8–10 exercises and should consist of at least 1 set of 8–12 repetitions per exercise.
Type	• Emphasis on aerobic exercises such as walking, jogging, cycling and swimming. Rope skipping is also a very good option that can be performed every day, requires little equipment and learning, and involves a lot of muscle group. However, any activity that uses large muscle groups, can be maintained continuously, and is rhythmical and aerobic in nature is recommended as the primary modality for those with hypertension. • Resistance exercise should involve the major muscle groups (legs, hips, chest, back, abdomen, shoulders, and arms). Either machine weights or free weights might be used while the former is likely the safest approach. Resistance exercise performed should be alternating between upper- body and lower-body works to allow for adequate rest between exercises. Some examples of resistance exercise include chest press, shoulder press, triceps extension, biceps curl, pull-down (upper back), lower-back extension, abdominal crunch/curl-up, quadriceps extension or leg press, leg curls (hamstrings), and calf raise.

* Given that many patients may present with comorbidities, it may be necessary to tailor the exercise prescription accordingly.

3. Rate of Progression

In November 2010, the American College of Sports Medicine and the American Diabetes Association published a joint position statement on exercise recommendations for patients with Type 2 diabetes mellitus which covers rate of progression. Their general principles, as outlined below, can also be applied to patients with hypertension:

- To avoid injury, progression of frequency and intensity of resistance exercise should occur slowly.
- Gradual progression of intensity of aerobic exercise is also advisable to enhance compliance.

4. Evaluation of patient with hypertension before recommending an exercise programme

The need for and scope of pre-exercise evaluation of the cardiovascular status will depend on the extent of the envisaged exercise and on the patient's symptoms and signs, total cardiovascular risk and associated clinical conditions. The risk of cardiovascular disease in patients with hypertension is determined not only by the level of blood pressure, but also by the presence or absence of target organ damage and other risk factors such as smoking, dyslipidaemia and diabetes, as shown in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. These factors independently modify the risk for subsequent cardiovascular disease, and their presence or absence is determined during the routine evaluation of patients with hypertension (i.e., history, physical examination, and/or laboratory tests). High-intensity resistance training should not be initiated for persons without prior exposure to more moderate resistance exercise independently of age, health status, or fitness level. Therefore, patients with hypertension should consult a primary care practitioner prior to any substantive increase in physical activity, particularly vigorous-intensity activity.

5. Special Precautions

1. Intensive isometric exercise such as heavy weight lifting can have a marked pressor effect and should be avoided.
2. If hypertension is poorly controlled, heavy physical exercise as well as maximal exercise testing should be discouraged or postponed until appropriate drug treatment has been instituted and blood pressure lowered. When exercising, it appears prudent to maintain systolic blood pressures at ≤220 mmHg and/or diastolic blood pressures ≤105 mmHg.
3. β-blockers and diuretics may adversely affect thermoregulatory function and cause hypoglycaemia in some individuals. In these situations, educate patients about the sign and symptoms of heat intolerance and hypoglycaemia, and the precautions that should be taken to avoid these situations.
4. Antihypertensive medications such as calcium channel blockers, α-blockers and vasodilators may lead to sudden reductions in post-exercise blood pressure. Extend and monitor the cool-down period carefully in these situations.
5. β-blockers, particularly the non-selective types, may reduce sub-maximal and maximal exercise capacity primarily in patients without myocardial ischaemia. Consider using perceived exertion to monitor exercise intensity in these individuals.
6. Patients should be informed about the nature of cardiac prodromal symptoms e.g. shortness of breath, dizziness, chest discomfort or palpitation and seek prompt medical care if such symptoms develop.

Reference:

Recommendations for Prescribing Exercise to Patients with Hypertension. Chapter 7, The Exercise Prescription Doctor's Handbook (2012). Department of Health.