Exercise Prescription for **Obesity**

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| **Specific / Clinical Objectives** | | ↓BF / Weight; ↑MSE ∴(↑LBM);  ↑CV conditioning ∴↓ CHD risk profile; Advice on healthy eating; ↑QOL / self confidence; ↑ Volitional PA levels. |
| **Modes** | **Aerobic** | NWB / PWB / low impact / large muscle group activities:  e.g., Walking, Cycling, Swimming or Water Aerobics1;  → X-training, Rowing, Group-based aerobics1;  (↑ ability to perform ADL). |
| **Resistance** | | Mixed circuit-based (↑ ability to perform ADL);  Machine → Free (see course manual for conflict issues) |
| **Contraindications** | | * Valsalva manoeuvre & Isometric contractions   (relative to the client’s blood pressure: hypertension). |
| **Frequency** | **Aerobic** | 2-5 d.p.w. (off-peak1) |
| **Resistance** | | 2-3 d.p.w. (off-peak1) |
| **Duration** | **Aerobic** | Thorough warm-up;  5-10 → 40-60 min main section;  Thorough cool-down. |
|  | **Resistance** | Main section: 1-3 sets of 10-15 reps  (not restricted to this, as client’s goals/needs may require more strength work or more endurance work). |
| **Intensity** | **Aerobic** | Low-Moderate:  Observation, Talk Test, RPE, HR, METs; |
|  | **Resistance** | Low-Moderate (rep range / RPE) |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Be aware of client self-concept (low self esteem, etc.).   Info: 3500 kcal = 0.45kg (1lb) of fat |
| **Specific Testing Modalities** | | CV capacity; BMI; Body composition. |

Exercise Prescription for **Arthritis (OA & RA)**

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| **Specific / Clinical Objectives** | | | ⇔ ↑ Joint function / Mobility and ROM; ↓ B.F% (possibly);  ↑ Muscular strength; ↑ Balance / Co-ordination;  ↑ General fitness; ↑ QOL / Management of condition. |
| **Modes** | **Aerobic** | | NWB / PWB / low impact / large muscle group activities:  e.g., Walking, Cycling, Swimming1 or Aqua-aerobics1;  → X-training, Rowing, Group-based aerobics;  (↑ ability to perform ADLs & emphasise daily mobility). |
| **Resistance** | | | Circuit-based (speed controlled: slow to begin with);  Machines → Free Weights (progression based on client competence and ability);  Calisthenics and resistance bands. |
| **Contraindications** | | | * Do not overstretch joints; * High repetition / High resistance / High impact; * During flare-ups for RA. |
| **Frequency** | | **Aerobic** | 3-5 d.p.w.:  (OA: Late AM / Early afternoon, generally);  (RA: Late afternoon / Evening, generally). |
| **Resistance** | | | 2-3 d.p.w.  (time of day: as above, and generally when the client feels least pain, stiffness and tiredness). |
| **Duration** | **Aerobic** | | **Prolonged warm-up;**  5 → 30+ min main section (intermittent: Start, Stop...);  Thorough cool-down. |
|  | **Resistance** | | **Prolonged warm-up;**  3 sets of 2-3 reps → 10-12 reps;  Thorough cool-down. |
| **Intensity** | **Aerobic** | | Low-Moderate (pain free):  Observation, Talk Test, RPE2, HR, METs |
|  | **Resistance** | | Low-Moderate (rep range / RPE):  As a guideline, but use pain tolerance as a marker, also. |
| **Progression** | | | Frequency (little and often), Duration, Mode / Intensity |
| **Comments** | | | 1. Warmer water is preferable. 2. Accuracy of RPE may be affected by condition / medication (pain killers).    * Be aware of entry/exit ability on equipment;    * Steroids can increase risk of stress fracture; |
| **Specific Testing Modalities** | | | ROM; Flexibility |

Exercise Prescription for **Joint Replacement**

Note that the type of replacement and details of patient/client will need to be considered.

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| **Specific / Clinical Objectives** | | Normalise BF / Weight; ↑MSE specifically with an ADL bias;  ↑CV conditioning ∴↓ CHD risk profile; Advice on healthy eating; ↑QOL / self confidence; ↑ Volitional PA levels and reduce sedentary behaviours. |
| **Modes**  **From 12 weeks (post-operative)** | **Aerobic** | NWB / PWB / low impact / large muscle group activities:  e.g., Walking, Cycling, Bowls, Swimming or Water Aerobics;  → Group-based aerobics;  (↑ ability to perform ADL). |
| **Resistance** | | Circuit-based (↑ ability to perform ADL);  Machine → Free (watch kinetic pathway on machines and set range of motion restrictions to preclude extremes of range). |
| **Contraindications** | | * Extremes of motion around the replaced joint * Jarring or high impact activities and sports with the potential for high impacts * Avoid crossing of legs (relative) |
| **Frequency** | **Aerobic** | 2-5 d.p.w. (off-peak) progressing to daily, out of the gym |
| **Resistance** | | 2-3 d.p.w. (off-peak) |
| **Duration** | **Aerobic** | 5-10 → 40-60 min main section (use pain or swelling as a time guide)  Thorough warm-up and cool-down. |
|  | **Resistance** | 1-3 sets of 10-15 reps (watch range, do not go to extremes)  Thorough warm-up and cool-down. |
| **Intensity** | **Aerobic** | Low-Moderate (all low impact):  Observation, Talk Test, HR, RPE, METs, pain or swelling; |
|  | **Resistance** | Low-Moderate (rep range / RPE) |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | Consider all other conditions/co-morbidities, particularly in the older patient/client  You must have a thorough, recorded, falls prevention assessment annually. |
| **Specific Testing Modalities** | | CV capacity; task-specific timed activities, BMI; Self esteem |

Exercise Prescription for **Osteoporosis**

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| **Specific / Clinical Objectives** | | ⇔ BMD (or reduce decline);  Falls prevention (↑ strength / co-ordination / mobility);  Reinforce changes in other lifestyle-related risk factors;  ↑ ⇔ CV conditioning ∴ ↓ CHD risk profile. |
| **Modes** | **Aerobic** | PWB / WB / low impact:  e.g., Walking, Cycling1; Swimming2;  → X-training, Group-based aerobics. |
| **Resistance** | | Machines → Free;  Bands / Floor exercises3;  Emphasise compression-based exercises and good posture. |
| **Contraindications** | | * Loaded Forward Flexion of spine: Yoga; Sit ups/curls; * Treadmill, if excessive kyphosis (MP-referred advice only); * Rapid trunk rotation. |
| **Frequency** | **Aerobic** | 3-5 d.p.w. (quiet / tidy times in gyms; avoid trip hazards) |
| **Resistance** | | 2-3 d.p.w. (quiet / tidy times in gyms; avoid trip hazards) |
| **Duration** | **Aerobic** | Thorough warm-up;  5-30+ min main section (continuous, although not exclusively);  Thorough cool-down. |
|  | **Resistance** | 1-3 sets / 20-40 min;  Thorough warm-up & cool-down |
| **Intensity** | **Aerobic** | Low-Moderate (pain free):  Observation (technique as well as intensity), Talk Test, RPE, HR, METs |
|  | **Resistance** | Low-Moderate (rep range / RPE);  Calisthenics for lower body activities, as a start;  Optimal progression to 2-3 sets of 5-8 reps per site (ACSM). |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| Comments | | 1. Maintain good posture.  2. Useful as CHD profile modifier for more pronounced clients.  3. Care with transitions and wrist loading.  Info: Any change in BMD takes at least 9 months to validate;  Assess client anxiety state (e.g., fear of falling). |
| **Specific Testing Modalities** | | N/A |

Exercise Prescription for **Simple Mechanical** **Back Pain**

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| **Specific / Clinical Objectives** | | ↓ Back Pain, ↓ Inactivity Levels; ↓ BF; ↑ SE;  ↑ ROM; ↑ Balance and Coordination. |
| **Modes** | **Aerobic** | Walking, Swimming1, Cycling  (avoid high impact activities) |
| **Resistance** | | Specific Calisthenics2, Bands |
| **Contraindications** | | * Ensure client has been cleared from ‘Red Flags’ by MP; * Un-supported back hyperextension. |
| **Frequency** | **Aerobic** | 3-5 d.p.w. |
| **Resistance** | | 2-3 d.p.w. |
| **Duration** | **Aerobic** | 5-30+ min main section  Thorough warm-up & cool-down |
|  | **Resistance** | 8-12 reps per major muscle group |
| **Intensity** | **Aerobic** | Low3; RPE 9-11 |
|  | **Resistance** | Low3; RPE 9-11 |
| **Progression** | | Repetitions,Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Avoid breast stroke as this can cause hyperextension of the back and exacerbate injury;  2. Review: Klaber Moffett, J.A & Frost, H. (2002) Back to Fitness Programme: The manual for physiotherapists to set up classes. Physiotherapist, 86(6): 295-305  and  McGill, S. (2002) Low back disorders: evidence based prevention and rehabilitation. Human Kinetics. Leeds.  3. There is presently no evidence for intensity setting; programmes should focus on individual client abilities and ensure correct posture and form during activities. |
| **Specific Testing Modalities** | | N/A |

Exercise Prescription for **Asthma**

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| **Specific / Clinical Objectives** | | ⇔ ↑ CR conditioning; ↑ QOL and well-being; ↑ breathing performance; ⇔ ↑ MSE to improve O2 uptake |
| **Modes** | **Aerobic** | Large muscle group activity:  e.g., Walking, Cycling, Swimming1; → X-training, Rowing, Arm ergometry, Running, Group-based aerobics, etc. |
| **Resistance** | | Machine2 → Free2; Isokinetic machines2  Pay attention to core & respiratory muscles;  PHA as a progression, depending on skill/fitness. |
| **Contraindications** | | * Cannot exercise unless client is in possession of their prescribed fast-acting bronchodilator (see inclusion criteria). |
| **Frequency** | **Aerobic** | 3-5 d.p.w. (time of day is trigger-dependent, although peak expiratory performance is best between 2-5pm, generally). |
| **Resistance** | | 2-3 d.p.w. (time of day, as above). |
| **Duration** | **Aerobic** | Thorough warm-up  5-30+ min main section (intermittent)  Thorough cool-down |
|  | **Resistance** | ≈15-20 reps for muscular endurance, but not exclusive.  Thorough warm-up & cool-down |
| **Intensity** | **Aerobic** | Low-Moderate → High (trigger-dependent):  Observation (dyspnoea/breathing difficulties), Talk Test (care not to disturb breathing), RPE, HR (medication-dependent), METs (medication-dependent). |
|  | **Resistance** | Low-Moderate → High |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Swimming may be beneficial due to warm, moist atmosphere; however, be aware of potential negative effects of chlorine and other cleaning agents.  2. Encourage rhythmical breathing synchronized to upper body movement: breathing out during highest effort phase (i.e., positive phase of press).   * Pilates, yoga and Tai Chi assists to provide strength, good posture and control of breathing |
| Specific Testing Modalities | | Gas analysis (MP provision); Micro-Spirometry (peak flow, etc.). |

Exercise Prescription for **COPD**

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| **Specific / Clinical Objectives** | | ⇔ ↑ CR conditioning; ↑ QOL and well-being; ↑ breathing performance/control; ⇔ ↑ MSE to improve O2 uptake;  ↑ muscle size and strength; ↑ gait & balance (possibly) |
| **Modes** | **Aerobic** | Large muscle group activity:  e.g., Walking, Cycling, Swimming; → X-training, Rowing, Arm ergometry, Running, Group-based aerobics1 |
| **Resistance** | | Machine → Free |
| **Contraindications** | | * MMF (relative to hypertension/OA); |
| **Frequency** | **Aerobic** | 3-7 d.p.w.; (mid to late afternoon, generally). |
| **Resistance** | | 2-3 d.p.w. (mid to late afternoon, generally). |
| **Duration** | **Aerobic** | Thorough warm-up;  5-30+ min main section (intermittent);  Thorough cool-down. |
|  | **Resistance** | 3 sets of 10-15 reps, initially to develop skill/control →  8-12 reps (traditional hypertrophy/overload principle);  Progress to possible MMF training2. |
| **Intensity** | **Aerobic** | Low-Moderate:  Observation (dyspnoea/breathing difficulties), Talk Test, RPE, HR (medication-dependent), METs (medication-dependent) |
|  | **Resistance** | Moderate → High (hypertrophy emphasis) |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Management/sputum limitations;  2. Only if client is able & willing to perform safely. Provision for a ‘spotter’ is highly recommended. |
| **Specific Testing Modalities** | | Micro-Spirometry (peak flow, etc.);  ECG (COPD may have co-existent CHD; MP provision);  Gas analysis (MP provision); |

Exercise Prescription for **Mental Health Disorders**

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| **Specific / Clinical Objectives** | | ↑ Mood; ↑ SE; ↓ Stress, Anxiety & Depression;  ↓ BF (possibly); ↓ Inactivity; ↓ CHD risk and risk of Chronic Physical Illness |
| **Modes** | **Aerobic** | Open choice1, but see course manual section for discussion of factors affecting selection of appropriate exercise. |
| **Resistance** | | Machine → Free, Calisthenics (especially traditional circuit training) |
| **Contraindications** | | * Client may have problems with voluntary movements, as well as excessive fatigue and dehydration; * Ensure adequate hydration and correct form / posture. |
| **Frequency** | **Aerobic** | 3-5 d.p.w. |
| **Resistance** | | 2-3 d.p.w. |
| **Duration** | **Aerobic** | Thorough warm-up  5-30+ min main section  Thorough cool-down |
|  | **Resistance** | Any, depending on client fitness, ability, needs and goals. |
| **Intensity** | **Aerobic** | Low-Moderate → High:  Observation, Talk Test, RPE, HR (medication-dependent), METs |
|  | **Resistance** | 1-2+ sets of 8-12 reps per major muscle group |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Note that some medication can result in dyskinesia (movement disorder), making the treadmill excessively challenging.   * Note that the TTM cannot necessarily be used to assess SOC with these clients; * Review the NSF for Mental Health; * Client may be prescribed Beta Blocking medication; * Overriding goal is to achieve government guidelines for participation of physical activity/exercise. |
| **Specific Testing Modalities** | | Standard exercise testing, but other pathologies will dictate the choice of suitable testing modalities. |

Exercise Prescription for **Diabetes Mellitus**

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| **Specific / Clinical Objectives** | | ↑ Muscular conditioning ∴↑ Insulin / Glucose sensitivity;  ↓ B.F (Type 2); ↓ CHD risk profile; ↑ Disease management / QOL; ↑ CV conditioning; ↑ balance and co-ordination |
| **Modes** | **Aerobic** | Large muscle activities1: e.g., Walking, Cycling2;  → X-training, Rowing, Stepping, Running; → Group-based aerobics; → Swimming3, Water Aerobics; |
| **Resistance** | | Machine → Free; Circuit-based; |
| **Contraindications** | | * Refer to pre-exercise blood glucose levels; * Do not exercise within 3 hours of intended sleep (see exercise considerations); * Valsalva manoeuvre (relative to hypertension); |
| **Frequency** | **Aerobic** | 4-7 d.p.w. (same time of day) |
| **Resistance** | | 2-3 d.p.w. (same time of day) |
| **Duration** | **Aerobic** | Thorough warm-up;  5-30+ min main section;  Thorough cool-down (60min maximum session duration)4 |
|  | **Resistance** | 1-3 sets of 10-12 reps → higher level if interested in sports/performance, once fitness and skill gains are achieved. |
| **Intensity** | **Aerobic** | Low-Moderate:  Observation (signs of hypoglycaemia), Talk Test (for coherence / slurred speech), RPE (may be affected by impairment of cognition), HR (blood-glucose-level dependent), METs |
|  | **Resistance** | Low-Moderate (rep range / RPE); |
| **Progression** | | Frequency / Duration, Mode / Intensity |
| **Comments** | | 1. PWB or NWB for obese type 2 clients;  2. Loosen or remove foot straps;  3. Risk of drowning, due to hypoglycaemia;  4. Risk of exercise-induced hypoglycaemia is increased with long exercise sessions.   * Yoga / Pilates / Tai Chi for balance / co-ordination. |
| **Specific Testing Modalities** | | CHD risk profile assessment. |

Exercise Prescription for **Hypertension**

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| **Specific / Clinical Objectives** | | ↓ BP; ↓ CHD risk profile; ↑ CV-based PA; ↓ BF (possibly);  ↓ Smoking (if applicable); ↑ MS conditioning; ↓ Stress;  ↑ Overall Kcal expenditure; Advice on healthy eating; |
| **Modes** | **Aerobic** | Large muscle group activity: e.g., **LSD, especially**,  **Walking**, Cycling; → X-training, Rowing, Stepping, Arm ergometry, Group-based aerobics → Swimming |
| **Resistance** | | Circuit-based, but see precautions in course manual. |
| **Contraindications** | | * SBP >180 mmHg or DBP >110 mmHg (pre-exercise); * Valsalva manoeuvre (breath-holding); * Isometric contractions (minimise); * Overhead resistance exercise (relative to technique); * Do not use resistance as only form of exercise; |
| **Frequency** | **Aerobic** | 3-7 d.p.w. (preferably not early morning) |
| **Resistance** | | 2-3 d.p.w. (preferably not early morning) |
| **Duration** | **Aerobic** | Warm-up length depends on prescribed medication;  5-60+ min session (emphasise continuous, LSD, if possible)  Cool-down length depends on prescribed medication. |
|  | **Resistance** | 15-25 reps, 1-3 sets (emphasise muscular endurance & see precautions in course manual)  → 10-15 reps, 1-3 sets. |
| **Intensity** | **Aerobic** | Low-Moderate:  Observation, Talk Test, RPE (medication dependent), HR (medication dependent), METs (test and medication dependent). |
|  | **Resistance** | Low resistance, high reps (endurance-based) |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | * Aerobic exercise at 40-70% MHR (or equiv.) most effective; * No further dose response evident. |
| **Specific Testing Modalities** | | BP; 12-lead ECG (MP provision); Gas analysis (MP provision); ETT or GXT (MP provision). |

Exercise Prescription for **CHD/Angina Pectoris**

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| **Specific / Clinical Objectives** | | ↑ CV conditioning ∴↑ Angina / Ischaemic threshold;  ↓ CHD risk profile; ↓ BP (possibly);  ↓ Stress; ↓ BF (possibly); Advice on healthy eating |
| **Modes** | **Aerobic** | **You must supervise 1st and during sessions with significant progressions (particularly intensity)**  Large muscle group activity: **LSD, especially**  **Walking**, Cycling; → X-training1, Rowing1, Stepping, Arm ergometry, Group-based aerobics → Swimming1 |
| **Resistance** | | Light (endurance-based) circuits; |
| **Contraindications** | | * Unstable angina (absolute) * Client must have their GTN (or equiv.) with them * Valsalva manoeuvre (breath-holding); * Isometric contractions (minimise). |
| **Frequency** | **Aerobic** | 3-7 d.p.w. |
| **Resistance** | | 2-3 d.p.w. |
| **Duration** | **Aerobic** | **Prolonged warm up**  5-60+ min session (emphasise continuous, LSD, if possible)  **Prolonged** **cool down** |
|  | **Resistance** | 15-25 reps, 1-3 sets (emphasise muscular endurance)  → 10-15 reps, 1-3 sets. |
| **Intensity** | **Aerobic** | Low-Moderate:  Observation, Talk Test, RPE (medication dependent), HR (medication dependent), METs.  Safe HR = 10-15 bpm below ischaemic threshold (MP-referred advice only from results of ETT. |
|  | **Resistance** | Low → Moderate (rep range / RPE) |
| **Progression** | | Duration, Frequency, Mode / Intensity |
| **Comments** | | 1. Consider cardiac load/demand on whole body activities;   * **Client must have GTN medication with them** * Encourage client not to exercise in a cold environment |
| **Specific Testing Modalities** | | 12 lead ECG (MP provision); ETT or GXT (MP provision);  CHD risk profile assessment. |