The Safe Exercise at Every Stage Guideline

Instructions for use

The Safe Exercise at Every Stage (SEES) guideline was developed to better facilitate clinical decision-making related to safe exercise for individuals with eating disorder symptomatology. This step-up/-down model involves two key components:

1. Risk assessment: Reviews key markers of psychological and physical health requiring assessment to facilitate safe exercise prescription.
2. Exercise recommendations: Describes exercise interventions as related to the level of risk identified in the risk assessment.

This guideline does not replace clinical judgment, but rather augments the ethical and clinical decision-making process. It is expected that clinicians review clients' medical and psychological progress in accordance with the guideline's risk levels regularly (i.e. weekly in Level A – highest risk, decreasing in relation to risk). We also recommend that psychological intervention occurs concurrently to exercise and nutrition interventions to best support clients. These should include addressing factors contributing to the development and maintenance of dysfunctional exercise behaviours as well as building healthy coping strategies.

Importance of Safe Exercise at Every Stage

Graded exercise can be safely undertaken during eating disorder treatment to achieve positive outcomes such as improved eating disorder symptomatology, general psychological well being, cardiac functioning and musculoskeletal health, as well as increased adherence to meal plans and treatment. However, the exact exercise recommendation for each client will differ depending on their level of physical and mental health risk in relation to exercise.

Using the SEES guideline

This guideline was developed to support clinicians in making evidence-based decisions when recommending safe exercise for their clients. It is important that exercise sessions be supervised in the initial stages with increasing autonomy permitted as treatment and recovery progress. Please note that it is not a requirement, nor always possible, for supervision to be conducted by a treatment team member. As such, we recommend that a trusted friend or partner with knowledge of the individual's exercise plan and limitations be present for these sessions. Regular medical reviews are required to decide whether the current exercise is maintained, progressed, or regressed, depending on client symptomatology and physiological results.

1. **Assessment:** Use psychological and physical results (as per page 28) to determine your client's level of risk when engaging in exercise. Always begin the assessment using the markers from the highest-risk category, Level A (as outlined on page 28). If no risk factors from Level A are identified, assess the measures in Level B, and so on. Note the risk category your client falls within.

2. **Recommendations:** Once the level of exercise risk has been identified (e.g. Level A), match with the corresponding exercise recommendation on page 29. Please note that even once an individual positively progresses past Level A (highest risk), clinicians are still recommended

to continue interventions from this level as they include important education regardless of health status. This continues to apply at Level D (lowest risk), whereby interventions from Level A, B and C should continue to be implemented.

3. **Step up/step down:** Individuals may step up (into the lower risk categories) and down (higher risk) on the guideline throughout treatment due to the non-linear nature of recovery. Specific reviews (e.g. weekly, monthly) are recommended in each level for this reason. Stepping up requires not only the clearance of all risk markers up to and including their current level, but individuals must also be adhering to treatment, increasing nutritional consumption and exhibiting improvements in health status. Conversely, an individual will step down to previous level/s if they exhibit any of the higher risk markers. Individuals must also step down a level with treatment/meal plan non-compliance, return to exercise compulsions, or a worsening of ED behaviours.

Intensity, Duration and Type of Exercise

The SEES guideline provides recommendations regarding the intensity, duration and type of exercise, however, deliberately does not specify the frequency of exercise sessions per week. This must be collaboratively determined by both the clinician and individual to prioritise safety, optimal treatment outcomes, and minimise harm.

Exercise is a positively indicated treatment component but is not compulsory and boundaries are important to prevent returning to dysfunctional exercise. Clinicians should work with clients to help them listen to their body signals prior to, during and after exercise sessions. This knowledge can then be incorporated into learning to match exercise type, intensity, and amount to their energy levels, creating exercise autonomy. Supervising professionals must be aware of each individual's limitations and any changes in energy and/or symptomatology to adjust exercise accordingly. This includes incidental physical activity (such as walking to appointments/work, cleaning/gardening, carrying groceries), which the clinician must discuss with their client and consider in addition to recommended exercise to determine an individual's total daily physical activity.

Limitations

This guideline does not replace clinical judgement by the treatment team. It has been developed for the use of trained medical and exercise professionals with expert knowledge in the physiology of eating disorders when working with the general adult population (aged 18 and over). Some special populations will need further support and must be assessed by a medical team and, where accessible, an accredited exercise professional (see glossary) before recommending an appropriate supervised exercise plan. Please note, this does not preclude these special populations from engaging in exercise; however, we encourage that adaptations to the SEES guideline for these populations must be done under the supervision of medical advice specific to their individual requirements. These populations may include (but are not limited to): Athletes, children/adolescents, and individuals with diabetes, osteopenia/osteoporosis, or other existing cardiovascular/respiratory, metabolic, neurological, psychological or musculoskeletal complications. Finally, whilst purging as a behaviour has not been included as a contraindication to exercise, we encourage practitioners to ensure a thorough and frequent assessment for individuals engaged in vomiting, laxative, or diuretic use and exercise due to the compromising nature of these behaviours (see *Purging and Hypovolemia*).

Increasing progression with nutritional plan

Level A Review weekly	Level B Review fortnightly	Level C Review monthly	Level D Review as required
Cardiovascular profile: HR<44bpm or >120bpm Postural tachycardia >20bpm Orthostatic hypotension >20mmHg systole (independent of symptoms) Systolic BP <90mmHg Prolonged QT/c interval >450msec Arrhythmias **Biochemical profile:** Hypokalemia <3.0mmol/L Hypophosphatemia <0.8mmol/L Hypomagnesemia <0.7mmol/L Hypercarbia >32mmol/L Hyponatremia <130mmol/L Hypoglycaemia <4mmol/L **Psychological profile:** *Dependent* category in Exercise Dependence Scale **Other:** Temperature <35°	*Individual has cleared all prior risk markers and is also adhering to:* **Individuals with AN:** Positive weight gain trajectory in line with treatment goals **Weight-restored individuals:** Weight stabilisation/mobilisation in line with treatment goals **Recommended to assess BMD if:** (i) underweight for > 6mths (ii) amenorrhea for > 6mths (iii) low testosterone in males (iv) history of stress or fragility fractures	*Individual has cleared all prior risk markers and is also adhering to:* Weight stabilisation or gain if still required Level A markers related to ED are completely normalised as per medical recommendation Managing ED behaviours (e.g. self-induced vomiting, restriction/ bingeing, fear of becoming fat, & laxative use) Normalised sex hormones without exogenous replacement (return to menses & normalized oestrogen for females; testosterone for males)	*Individual has cleared all prior risk markers and is also adhering to:* Weight progression >90% of IBW (considering individual weight history & family characteristics)

Symptom regression, treatment/meal plan noncompliance, return to exercise compulsion

Exercise Components:	SEES Recommendations: Level A	Level B	Level C	Level D
Intensity	TT: ≤2 METS: <3	TT: ≤ 5 METS: 3-5	TT: ≤8 METS: 6-8	Individualised
Duration	30min max	30min max	60min max (30min max cardio; 30min max resistance)	Individualised
Stretching	Static (without orthostatic compromise)	Dynamic warm up; static cool down		
Cardiovascular/ respiratory exercise	Nil	Low impact; social/games focus (excluding return to sport) (e.g. gentle Yoga and Pilates, table tennis, walking, swimming)	Moderate impact (excluding return to sport) (e.g. cardio classes, jogging)	High impact; return to sport (e.g. rugby, football, martial arts, basketball, hockey); individualised; or may return to previously dysfunctional cardio exercise
Resistance exercise	Nil	Social, functional body weight (e.g. circuit)	All resistance exercise (e.g. weight lifting, weights classes)	All resistance exercise; may return to previously dysfunctional resistance exercises
Setting	Indoor or outdoor			
Supervision	Medical supervision required	Medical OR friend/family	Flexible (social partner encouraged)	Flexible, progressing to unsupervised
Education	Identify unhealthy exercise beliefs Nutrition support Ambulation assessment & injury prevention in daily living tasks (e.g. correct bending technique) Breathing & body awareness tasks Introduction to intuitive movement Assessment of exercise habits prior to treatment & long-term exercise goals Physiological education Consider suggestions in *Facilitating the implementation of SEES* section	Continue relevant/outstanding interventions and: Further challenge unhealthy exercise beliefs Continue exploring & practicing intuitive movement	Continue relevant/outstanding interventions and: Increase exercise intensity in conjunction with body awareness Set future exercise goals	Continue relevant/outstanding interventions and: Address remaining unhealthy aspects of exercise relationship, renormalising & increasing autonomy Develop future exercise plan in accordance with treatment plan & activity goals including focus on relapse prevention

MEDICAL COMPLICATIONS OF EATING DISORDERS AND EXERCISE

EATING DISORDER (IRRESPECTIVE OF WEIGHT, SHAPE OR SIZE)

↓

↓ ENERGY & FLUID AVAILABILITY, MALNUTRITION, STARVATION, PURGING

↓

HEALTH CONSEQUENCES OF ED

PSYCHOLOGICAL
Exercise dependence
Anxiety
Depression
Irritability
Dysfunctional attitudes
Emotional distress
↓ stress tolerance
Interpersonal dependence
Pain medication reliance & side effects
↓ health related quality of life
Withdrawals from exercise
Neglect of life for exercise

CARDIOVASCULAR
Bradycardia
Tachycardia
Postural tachycardia
Orthostatic hypotension
Hypotension
Prolonged QTc interval
Arrhythmias
Superior mesenteric artery syndrome
Cardiac arrest
Heart failure
Angina
Palpitations
Heart attack
Mitral valve disease
Torsade de pointes
Organ damage & failure
Abnormal blood oxygen saturation
Aortic obstruction
Pericardial effusion
↓ stroke volume
↓ left ventricular mass
Peripheral blood pooling

RESPIRATORY
Shortness of breath
Rapid, shallow breathing
Hyperventilation
Respiratory compromise
Respiratory paralysis

MUSCULAR
Muscular dysfunction
Weakness
Cramping
Tremors & fasiciulations
Pain
Rhabdomyolysis
Tetany
Catabolism

SKELETAL
Uncoupling of bone
↓ bone mineral density & geometry
↓ lying down of lifetime bone
Difficulty reacquiring bone
Osteoporosis & osteopenia
Cortical thinning
↓ trabecular number & density
↓ space between trabeculae
↓ bone calcium regulation
Permanent postural damage

NEUROLOGICAL
Autonomic nervous system dysfunction
Neuralgia
Ataxia
Vertigo
Dysphagia
Requirement of pain medication
Irreversible brain damage

ELECTROLYTES
Hypokalemia
Hypophosphatemia
Hypomagnesemia
Hypercarbia
Hyponatremia

HYDRATION
Hypohydration
Dehydration
Hypovolemia

TEMPERATURE
Hypothermia
Hyperthermia
General coldness

METABOLIC
↓ resting metabolic rate
↓ glycogen
↓ leptin
↓ triiodothyronine
↓ growth hormone
↓ insulin-like growth factor 1
↓ urine specific gravity
↑ blood urea nitrogen
↑ ghrelin
↑ peptide tyrosine tyrosine
↑ cortisol
↑ transaminase
Hypoglycemia

SEXUAL
↓ estrogen
↓ testosterone
↓ luitinising hormone
↓ follicle stimulating hormone
Risk of menstrual disturbance & dysfunction
Functional hypothalamic amenorrhea

COMORBID ILLNESS
↑ risk of developing an illness

ANTHROPOMETRY
↓/↑ body fat percentage
↓/↑ body mass index
↓/↑ ideal body weight
↓/↑ fat mass

HAEMATOLOGICAL
Anemia

IMMUNOLOGICAL
↑ risk of infection

OTHER SYMPTOMS
Fainting
Unconsciousness
Dizziness
Fatigue
Confusion
Weakness
Light headedness
Visual blurring or tunnel vision
Poor concentration
Nausea
Headaches
Early satiety
Pallor
Cold, clammy skin
Constipation
Delerium
Coma
Death
Seizures
Cyanosis
Vomiting
Abdominal pain
Rectal prolapse
Hospitalization risk
Poor long term outcomes

CONSEQUENCES OF EXERCISING WITH AN ED WITHOUT APPROPRIATE MODIFICATION

PSYCHOLOGICAL
Further exercise dependence
↓ psychological capacity

CARDIOVASCULAR
↓ cardiac output during exercise
↓ endurance performance

MUSCULOSKELETAL & NEUROLOGICAL
Bone & muscle catabolism
Worsened long-term bone health
↑ amino acid catabolism
↑ stress fracture risk & prevalence
↑ muscle pain due to circulatory lactate
↓ oxygen perfusion, uptake & utilization
↓ muscle strength
↑ injury risk
↓ concentration in sport
↓ judgement in sport
↓ coordination
↓ training adaptations & responses

ELECTROLYTES
↑ electrolytes lost in sweat

HYDRATION
Hypohydration
Hypovolemia

TEMPERATURE
↑ risk of heat illness & heat stroke

METABOLIC
Induce or worsen hypoglycemia
Adrenal dysfunction
↑ blood urea nitrogen (indirectly)

SEXUAL
Induce or worsen FHA & its associated risks

COMORBID ILLNESS
↑ risk of negative outcomes with comorbid condition

Organ dysfunction

OTHER
Exercise intolerance
Fatigue
Time away from spor
Relative Energy Deficiency in Sport
ENERGY AVAILABILITY FURTHER DECREASED