



Applying the principles of nutrition to a physical activity programme

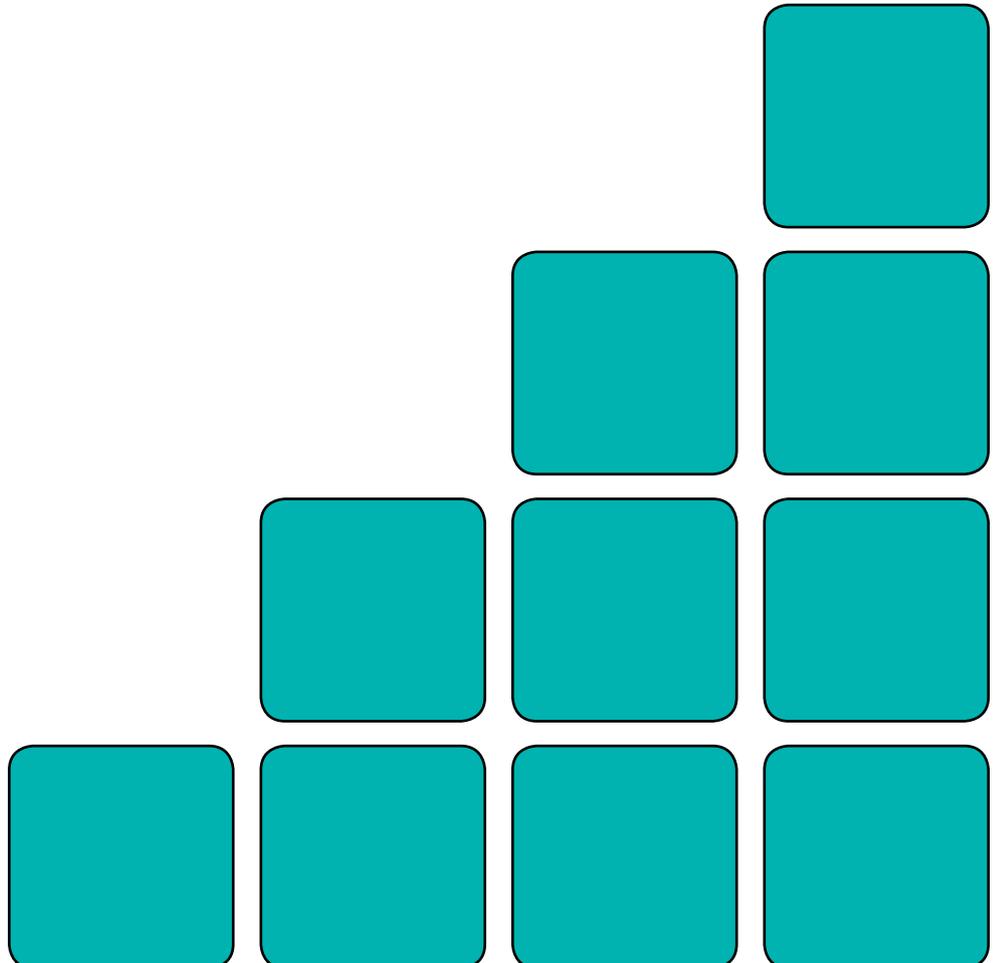
UV30539

L/600/9054

Learner name:

Learner number:

VRQ



UV30539

Applying the principles of nutrition to a physical activity programme

It is the aim of this unit to develop your knowledge and understanding of the principles of nutrition. It also aims to develop the skills needed to apply nutrition to an exercise and physical activity programme, in support of client goals.

Level

3

Credit value

6

GLH

40

Observation(s)

0

External paper(s)

0



Applying the principles of nutrition to a physical activity programme

Learning outcomes

On completion of this unit you will:

1. Be able to collect and analyse nutritional information
2. Be able to apply the principles of nutrition to a physical activity programme
3. Understand the principles of nutrition
4. Understand key guidelines in relation to nutrition
5. Understand nationally recommended practice in relation to providing nutritional advice
6. Understand the relationship between nutrition and physical activity
7. Understand how to collect information relating to nutrition
8. Understand how to use nutritional information
9. Understand the principles of nutritional goal setting with clients

Evidence requirements

1. *Knowledge outcomes*
There must be evidence that you possess all the knowledge and understanding listed in the 'Knowledge' section of this unit. This evidence may include projects, assignments, case studies, reflective accounts, oral/written questioning and/or other forms of evidence.
2. *Tutor/Assessor guidance*
You will be guided by your tutor/assessor on how to achieve learning outcomes in this unit. All outcomes must be achieved.
3. *External paper*
There is no external paper requirement for this unit.

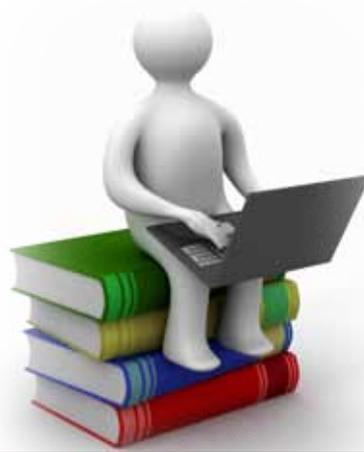
Developing knowledge

Achieving knowledge outcomes

You will be guided by your tutor and assessor on the evidence that needs to be produced. Your knowledge and understanding will be assessed using the assessment methods listed below:

- Observed work performance
- Witness testimony/statements
- Audio-visual media
- Evidence of prior learning or attainment
- Written questions
- Oral questions
- Assignments
- Case studies
- Professional discussion
- Employer-provided question papers and tests
- E-assessment.

Knowledge



Outcome 1

Be able to collect and analyse nutritional information

You can:	Portfolio reference / Assessor initials*
a. Collect information needed to provide clients with appropriate healthy eating advice	
b. Record information about clients and their nutritional goals in an approved format	
c. Analyse collected information including nutritional needs and preferences in relation to the clients current status and nutritional goals	

**Assessor initials to be inserted if orally questioned.*



Outcome 2

Be able to apply the principles of nutrition to a physical activity programme

You can:	Portfolio reference / Assessor initials*
a. Access and make use of credible sources of educational information and advice in establishing nutritional goals with clients	
b. Design and agree nutritional goals that are compatible with the analysis, accepted good practice and national guidelines	
c. Ensure that the nutritional goals support and integrate with other programme components	
d. Agree review points with the clients	
e. Review the clients understanding of how to follow the nutritional advice as part of their physical activity programme	
f. Monitor, evaluate and review the clients' progress towards their nutritional goals	

**Assessor initials to be inserted if orally questioned.*



Outcome 3

Understand the principles of nutrition

You can:	Portfolio reference / Assessor initials*
a. Describe the structure and function of the digestive system	
b. Explain the meaning of key nutritional terms including: <ul style="list-style-type: none"> • diet • healthy eating • nutrition • balanced diet 	
c. Describe the function and metabolism of: <ul style="list-style-type: none"> • macronutrients • micronutrients 	
d. Explain the main food groups and the nutrients they contribute to the diet	
e. Identify the calorific value of nutrients	
f. Explain the common terminology used in nutrition including: <ul style="list-style-type: none"> • UK dietary reference values (DRV) • recommended daily allowance (RDA) • recommended daily intake (RDI) • glycemic index 	
g. Interpret food labelling information	
h. Explain the significance of healthy food preparation	
i. Explain the relationship between nutrition, physical activity, body composition and health including: <ul style="list-style-type: none"> • links to disease/disease risk factors • cholesterol • types of fat in the diet 	

*Assessor initials to be inserted if orally questioned.



Outcome 4

Understand key guidelines in relation to nutrition

You can:	Portfolio reference / Assessor initials*
a. Identify the range of professionals and professional bodies involved in the area of nutrition	
b. Explain key healthy eating advice that underpins a healthy diet	
c. Describe the nutritional principles and key features of the national food model/guide	
d. Define portion sizes in the context of the national food model/guide	
e. Explain how to access reliable sources of nutritional information	
f. Distinguish between evidence-based knowledge versus the unsubstantiated marketing claims of suppliers	

**Assessor initials to be inserted if orally questioned.*



Outcome 5

Understand nationally recommended practice in relation to providing nutritional advice

You can:	Portfolio reference / Assessor initials*
a. Explain professional role boundaries with regard to offering nutritional advice to clients	
b. Explain the importance of communicating health risks associated with weight loss fads and popular diets to clients	
c. Evaluate the potential health and performance implications of severe energy restriction, weight loss and weight gain	
d. Identify clients at risk of nutritional deficiencies	
e. Explain how cultural and religious dietary practices can influence nutritional advice	
f. Describe safety, effectiveness and contra-indications relating to protein and vitamin supplementation	
g. Explain why detailed or complex dietary analysis that incorporates major dietary change should always be referred to a registered dietician	

**Assessor initials to be inserted if orally questioned.*



Outcome 6

Understand the relationship between nutrition and physical activity

You can:	Portfolio reference / Assessor initials*
a. Define the role of carbohydrate, fat and protein as fuels for aerobic and anaerobic energy production	
b. Explain the components of energy expenditure and the energy balance equation	
c. Explain how to calculate an estimate of Basal Metabolic Rate (BMR)	
d. Explain how to estimate energy requirements based on physical activity levels and other relevant factors	
e. Identify energy expenditure for different physical activities	
f. Evaluate the nutritional requirements and hydration needs of clients engaged in physical activity	

*Assessor initials to be inserted if orally questioned.



Outcome 7

Understand how to collect information relating to nutrition

You can:	Portfolio reference / Assessor initials*
a. Explain why it is important to obtain clients' informed consent before collecting nutritional information	
b. Describe the information that needs to be collected to offer nutritional advice to clients	
c. Explain the legal and ethical implications of collecting nutritional information	
d. Describe different formats for recording nutritional information	
e. Explain why confidentiality is important when collecting nutritional information	
f. Describe issues that may be sensitive when collecting nutritional information	
g. Explain different methods that can be used to measure body composition and health risk in relation to weight	

**Assessor initials to be inserted if orally questioned.*



Outcome 8

Understand how to use nutritional information

You can:	Portfolio reference / Assessor initials*
a. Describe basic dietary assessment methods	
b. Explain how to analyse and interpret collected information so that clients' needs and nutritional goals can be identified with reference to the national food model/guide recommendations	
c. Describe how to interpret information gained from methods used to assess body composition and health risk in relation to weight	
d. Explain how to sensitively divulge collected information and 'results' to clients	
e. Explain how to recognise the signs and symptoms of disordered eating and healthy eating patterns	
f. Explain how to recognise the signs and symptoms of disordered eating and healthy eating patterns	
g. Describe the key features of the industry guidance note on 'Managing users with suspected eating disorders'	
h. Explain the circumstances in which a client should be recommended to visit their GP about the possibility of referral to a registered dietician	

*Assessor initials to be inserted if orally questioned.



Outcome 9

Understand the principles of nutritional goal setting with clients

You can:	Portfolio reference / Assessor initials*
a. Explain how to apply the principles of goal setting when offering nutritional advice	
b. Explain how to translate nutritional goals into basic healthy eating advice that reflects current national guidelines	
c. Explain when people other than the client should be involved in nutritional goal setting	
d. Define which other people could be involved in nutritional goal setting	
e. Identify the barriers which may prevent clients achieving their nutritional goals	
f. Explain how to apply basic motivational strategies to encourage healthy eating and prevent non-compliance or relapse	
g. Explain the need for reappraisal of clients' body composition and other relevant health parameters at agreed stages of the programme	

*Assessor initials to be inserted if orally questioned.

Unit content



This section provides guidance on the recommended knowledge and skills required to enable you to achieve each of the learning outcomes in this unit. Your tutor/assessor will ensure you have the opportunity to cover all of the unit content.

Outcome 1: Be able to collect and analyse nutritional information

Collect information: Personal goals, specific fitness needs, general health needs, lifestyle (occupation, physical activity), medical history (including body composition), diet history (food and fluid timings, food and fluid types, food and fluid portion sizes/amounts, method of cooking or preparation, mood after eating), food preferences, supplement use, nutritional knowledge, attitudes and motivation, stage of readiness, use methods for collecting information (verbal discussion, questionnaires, audio, video, food diary).

Record information about clients: Use approved formats (written, ICT spreadsheet), adhere to data protection legislation, confidentiality, record nutritional SMART goals (healthy eating, weight management, improved fitness, improved self image).

Analyse collected information: Nutritional needs and preferences, in relation to current status and nutritional goals, calculation of energy intake and energy expenditure, calculation of daily calorific intake, comparison of nutrient intakes to recommended amounts, comparison of dietary behaviour to national guidelines and recommendations, comparison of body composition to normative data tables, classification of health risk (underweight, healthy, overweight, obese, moderately obese, and severely obese).



Outcome 2: Be able to apply the principles of nutrition to a physical activity programme

Access and make use of credible

sources of information: Evidence based books, evidence based journals, evidence based websites.

Design and agree nutritional goals:

Short, medium and long term, SMART (Specific, Measurable, Achievable, Realistic, Time bound), goals (healthy eating, weight management, improved fitness, and improved self image), agree (use communication skills, use negotiation skills, reach a mutual agreement).

Ensure goals integrate with other programme components:

Types of exercise and activity, schedule of exercise and activity, health and fitness development, lifestyle.

Agree review points with clients: Review points (short, medium, long term), agree (use communication skills, use negotiation skills, reach a mutual agreement).

Review the client's understanding:

Summarise the nutritional advice, discuss the advice with the client, question the client about key advice, provide opportunity for the client to ask questions.

Monitor, evaluate and review the client's progress:

Against previous SMART goals, fitness re-assessment, food diary analysis, evaluate client strengths and areas for improvement, set new SMART goals, address barriers, review motivation and support strategies.



Outcome 3: Understand the principles of nutrition

Structure and function of the digestive system:

Structure (mouth, oesophagus, stomach, duodenum, pancreas, liver, gall bladder, small intestine, large intestine, rectum, kidneys, digestive juices and enzymes), functions (digestion, absorption, excretion).

Key nutritional terms: Diet, healthy eating, nutrition, balanced diet.

Macronutrients:

Carbohydrates – simple carbohydrates (monosaccharides, disaccharides), complex carbohydrates (polysaccharides, soluble and insoluble fibre).

Fats – saturated, unsaturated, cholesterol, fatty acids, trans fats, omega 3, omega 6.

Proteins – essential, non-essential.

Micronutrients:

Vitamins – water soluble vitamins C and B, fat soluble vitamins A, D, E and K.

Minerals – calcium, copper, iron, magnesium, phosphorus, potassium, sodium, selenium, zinc, water.

Function of macronutrients:

Carbohydrates – energy, digestion, nervous system function.

Fats – provide essential fatty acids, insulation, protection of vital organs, energy, transport fat soluble vitamins, synthesis of nerves and cell membranes.

Protein – muscle growth, muscle repair, oxygen transport, fight disease, energy.

Metabolism of macronutrients:

Carbohydrates – glucose stored in the blood as blood sugar, stored as glycogen in liver and muscles.

Fats – glycerol and fatty acids.

Proteins – amino acids.

Function of micronutrients:

Vitamins – energy, metabolism, protein synthesis, glycogen synthesis, blood clotting, red blood cell formation, aids growth, maintenance of teeth and bones, aids vision.

Minerals – Bone growth, teeth growth, energy production, enzyme function, nerve and muscle function, water balance, blood clotting, oxygen transport in red blood cells.

Function of water: Maintain hydration, maintain homeostasis, heat regulation, maintain blood plasma volume, removal of waste products.

Main food groups and nutrients:

Grains – e.g. bread, pasta, potatoes, cereal and rice, (food group we should eat most often, provide carbohydrates for energy, fibre).

Fruit and vegetables – wide variety should be eaten, provide fibre, vitamins and minerals, low in fat and calories.

Dairy – milk, cheese and yoghurt, best source of calcium for strong teeth and bones.

Meat and protein – fish, nuts, dry beans and eggs, provides us with protein, iron and zinc.

Fats – oils, sweets including cakes, biscuits, pastries etc, provide hardly any nutrition, eat sparingly.

Calorific value of nutrients: Definition of calorie, carbohydrate (4kcal), protein (4 kcal), fat (9 kcal), alcohol (7kcal).



Outcome 3: Understand the principles of nutrition (continued)

Common terminology used in nutrition:

UK Dietary Reference Values (DRV), Recommended Daily Allowance (RDA), Recommended Daily Intake (RDI), Glycemic Index (GI), Glycemic Load (GL).

Food labelling information: Requirement for most packaged foods, name of food, weight of the food, any special storage considerations, a 'best before' date, a 'use before' date, the name and address of the manufacturer, the place of origin, not a legal requirement to have nutritional information on a product unless a specific claim has been made e.g. low fat, additional information that is usually included (macronutrient amounts in grams, nutritional information provided per 100 grams/per portion of food, total energy value (Kjoules, Kcal), micronutrient % RDA, ingredients, (saturated fats, sugars, sodium, salt, fibre), food standards agency guidelines).

Significance of healthy food

preparation: Food preparation (baking, grilling, boiling, steaming, healthy cooking oils, adding salt), significance (healthy levels of fat and salt intake, preserving nutrients in the preparation process).

Relationship between nutrition, physical activity, body composition and health:

Links to disease/disease risk factors (e.g. hypertension, CHD, osteoporosis, diabetes, obesity, excessive alcohol intake), cholesterol (effect of intake and physical activity on LDL:HDL ratio, effect of intake on body composition), types of fat in diet (effects of intake on body composition and health).



Outcome 4: Understand key guidelines in relation to nutrition

Professionals and professional bodies:

Professionals (dietician, nutritionist, G.P.), professional bodies (British Dietetic Association, Association for Nutrition, Food Standards Agency).

Healthy eating advice: Balanced intake of nutrients, regular timing of food intake, high fibre, low in fat, low in salt, five portions of fruit and vegetables a day, alcohol intake within recommended guidelines.

National food guide: Model (Food Standards Agency Eatwell Plate - Balance of Good Health), nutritional principles and features (food types, balanced intake of macronutrients and micronutrients, food proportions, food choices), portion sizes.

Portion sizes: Balance of good health plate approximate portion sizes, servings per day.

Grains – six to eleven.

Fruit and vegetables – three servings of fruit and three to five servings of vegetables.

Dairy – two to four servings.

Meat and protein – two to three servings.

Fat, oils and sweets – eat sparingly.

Correct proportions of each food group per day:

Carbohydrates – 50% to 60%.

Fat – less than 35% from fat, no more than 10% from saturated fat.

Protein – 15%.

Fibre – 18gm of fibre/starch polysaccharides.

Variation of dietary needs – vary according to age, sex, activity levels,

health, body size and genetics.

Reliable sources of information:

Evidence based text books, evidence based journals, evidence based websites, Food Standards Agency.

Unsubstantiated marketing claims of suppliers: Advertising has to conform to strict legal guidelines, definitions of low sugar, low fat, light, less than 5% fat, 95% fat free, reduced fat, lite.



Outcome 5: Understand nationally recommended practice in relation to providing nutritional advice

Professional role boundaries: Code of Ethics, REPS Code of Conduct, scope of practice, when to refer to GP or dietary professional for advice (medical conditions e.g. obesity or CHD, malnutrition, underweight, eating disorders).

Importance of communicating health risks: Reduce risk of diet-related health problems, raise awareness of the dangers of unsubstantiated diets, promote safe and effective dietary practice for weight management and physical activity.

Potential health and performance implications: Severe energy restriction (e.g. exhaustion, skin problems, confusion, loss of muscle mass, reduced muscular fitness, reduced aerobic capacity), weight loss (e.g. fatigue, reduced concentration, weakened immune system, reduced muscular fitness), weight gain (e.g. obesity, diabetes, hypertension, CHD, increased risk of musculoskeletal injury, reduced aerobic capacity, reduced range of motion and mobility, reduced self esteem, negative body image).

Clients at risk of nutritional deficiencies: Overweight/obese clients, older clients, on fad or popular diets, on restricted diets, on vegetarian or vegan diets, on gluten free diets, pregnancy, with medical conditions (e.g. celiac disease, irritable bowel syndrome).

Cultural and religious dietary practices: Cultures and religions (e.g. Muslim, Jewish, Buddhist, Hindu), influence on nutritional advice (e.g. forbidden foods, periods of dietary fasting or restriction).

Protein and vitamin supplementation: Safety (approved, intake within recommended guidelines), effectiveness

(for supplementing restricted diets, for supporting intense training programmes), contra-indications (e.g. abnormalities in liver and kidney function, digestive system problems).

Dietary analysis: Complex or detailed dietary analysis, major dietary change, reasons for referral to registered dietician (potential health impacts, outside professional role boundaries, recognised standard of specialist expertise).



Outcome 6: Understand the relationship between nutrition and physical activity

Fuels for aerobic and anaerobic energy production:

Role of carbohydrate (for anaerobic glycolysis, for aerobic energy production during higher exercise intensity), fats (for aerobic energy production during lower exercise intensity), role of protein (used for aerobic energy production during energy depletion), relative contributions of energy substrates during different activities and exercise intensities.

Energy expenditure and energy balance:

Components of energy expenditure (Basal Metabolic Rate, physical activity level), energy balance equation (energy intake, energy expenditure, positive energy balance, negative energy balance).

Estimate Basal Metabolic Rate:

Calculating estimates using equations (e.g. Harris-Benedict), indirect calorimetry.

Estimate energy requirements: Based on physical activity levels (sedentary, moderately active, very active lifestyles), physical activity log, physical activity reference tables, based on other relevant factors (e.g. occupation, lifestyle, physical activity).

Energy expenditure for different physical activities: Energy expenditure (METs, Kcal/h), physical activities (e.g. running, walking, swimming, cycling, gardening, housework).

Evaluate nutritional requirements and hydration needs: Evaluation of needs (goals, body composition, physical activity levels, exercise levels, sports participation, occupation, and lifestyle), requirements pre, during and post-activity.



Outcome 7: Understand how to collect information relating to nutrition

Importance of informed consent:

Law of Tort (Delict in Scotland), REPS Code of Conduct, insurance policies, to ensure clients full understanding, clear up misconceptions.

Information to be collected: Personal goals, lifestyle (occupation, physical activity), medical history, diet history (food and fluid timings, food and fluid types, food and fluid portion sizes/amounts, method of cooking or preparation, mood after eating), food preferences, supplement use, nutritional knowledge, attitudes and motivation, stage of readiness.

Legal and ethical implications: Law of Tort, REPS Code of Conduct, data protection legislation, confidentiality.

Recording nutritional information: Food diary or log (written, ICT spreadsheet), questionnaires, audio record, video record.

Importance of confidentiality: Adherence to the law, follow professional codes of conduct, maintain client's trust and respect.

Sensitive issues: Weight, body composition, anthropometrical measurements, dietary habits (e.g. over eating, yo-yo dieting), eating disorders, medical conditions, alcohol intake.

Methods used to measure body composition: Body mass index (BMI), waist to hip ratio, visceral measurements, skin-fold callipers, bio-electrical impedance, hydrostatic weighing, classification of health risk in relation to weight (underweight, overweight, obese, moderately obese, and severely obese).



Outcome 8: Understand how to use nutritional information

Dietary assessment methods: food diary (food and fluid timings, food and fluid types, food and fluid portion sizes/amounts, method of cooking or preparation, mood after eating), use of computer software to assess daily caloric intake.

Analyse and interpret collected information: Calculation of energy intake and energy expenditure, calculation of daily caloric intake, comparison of nutrient intakes to recommended amounts, comparison of dietary behaviour to national guidelines and recommendations.

Interpret information gained from methods: Calculations, comparison to normative data tables, classification of health risk (underweight, healthy, overweight, obese, moderately obese, and severely obese).

Sensitively divulging collected information and results: Confidentiality, empathy, calm and relaxed, emphasis on positive action, use of verbal and non-verbal communication skills.

Signs and symptoms of disordered eating: Obsession with body weight, obsessive perceptions of being underweight/overweight, eating a limited or restricted diet, making excuses not to eat, picking at food, using the bathroom immediately after eating, fluctuations in weight, mood swings, excessive or obsessive exercise behaviour, physical and psychological symptoms of anorexia nervosa and bulimia.

Managing users with suspected eating disorders: Institute of Sport and Recreation Management guidance note, key features (recognising warning signs, recognising signs and symptoms,

what to do, operational implications and recommendations).

Circumstances to recommend a visit to a GP: Medical conditions e.g. obesity or CHD, malnutrition, excessively underweight, eating disorders.



Outcome 9: Understand the principles of nutritional goal setting with clients

Principles of goal setting: Short, medium and long term, SMART (specific, measurable, achievable, realistic, time bound), goals (healthy eating, weight management, improved fitness, improved self image).

Translating nutritional goals: Translate technical terminology into recognised terminology e.g. timings of food intake, quantities and portion sizes, appropriate food choices, balance on the plate, servings of fruit and vegetables.

Others involved in nutritional goal setting: Dietician, nutritionist, GP, family, friends, when others should be involved (health risks or medical conditions, eating disorders, additional motivation and support required).

Barriers to achievement: Time, cost, lack of knowledge, lifestyle, occupation, attitudes and beliefs of family and peers, culture and religion.

Motivational strategies: Goal setting, positive reinforcement, contracting, rewarding achievement, information and education, decision balance, support from others, regular contact.

Reappraisal of body composition: Monitor and review progress and achievement, monitor health status, set new nutritional goals, review energy requirements, provide motivation.

Notes

Use this area for notes and diagrams