Aim

This is a preparation for work unit which is based on knowledge and understanding. This unit is about the nature of ageing, causes and effects of ageing on the body systems, and the beauty treatments and products that may delay the ageing process.

Unit abstract

This unit provides the learner with the opportunity to explore the concept of ageing, by investigating theories and the effects of age on various systems of the human body. This in turn will develop their understanding of the conditions presented by clients seeking advice and treatment, including treatment which may assist in delaying the ageing process. The underlying mechanisms of ageing are investigated with specific consideration given to factors contributing to the ageing of the skin, and degenerative disorders affecting body systems.

Learning outcomes

On successful completion of this unit a learner will:

1. Understand the nature of ageing
2. Understand the causes and effects of ageing of the skin
3. Understand the causes and effects of degenerative disorders as a result of the ageing process
4. Understand how beauty therapy treatments and products may delay the ageing process.
Unit content

1 Understand the nature of ageing

Characteristics of ageing: senescence eg chemical damage, natural ageing; increased vulnerability to disease, muscle weakness, gene mutation; age-related confusion and memory loss; slower recovery rates from injury or illness; cognitive decline

Environmental effects: intrinsic; extrinsic

Theories of ageing: current and relevant theories eg Gompertz–Makeham law of mortality, evolution of ageing, apoptosis, DNA damage theory, telomeres, genetically programmed cell division, free radicals, role of glucose, autoimmune response

Ageing process in cells and tissues: cell renewal; mutation; damage; cell differentiation and mitotic ability

2 Understand the causes and effects of ageing of the skin

Changes to the repair mechanisms of the skin: collagen reduction and oestrogen production; ROS molecules; antioxidant defence; reduction in hormones and chemicals for repair

How ageing causes microscopic changes to the structure of skin: epidermal ageing and thinning; connective tissue reduces skin strength and elasticity eg elastosis and solar elastosis; fragile blood vessels of the dermis eg senile purpura and bruising; melanocytes enlarge and reduce in number; reduction in efficiency of sebaceous and oil gland eg dryness, dehydration and risk of overheating and heatstroke; subcutis thins eg injury and hypothermia; cell structure eg turnover, size, shape, thickness, appearance; inflammatory response; rate of healing; barrier function

Causes of changes to the skin: true ageing; premature; environmental factors eg smoking, UV; cultural; biological eg gender, hereditary, genetics

Pathological conditions of the skin: pathological conditions eg pruritus, eczematous dermatitis, purpura, ulcers, malignant melanoma, basal cell and squamous cell carcinoma, solar keratosis, lentigens, skin tags, moles, Kaposi’s sarcoma, skin cancer, ulcers, herpes zoster, senile pruritus

Ageing effect of UV on the skin: depth of penetration of UV rays (A, B, C); cellular damage; immunosupression; photoageing; DNA damage; solar erythema; keratinocytes; skin cancer; solar keratoses; degradation of collagen and elastin; accelerated ageing; solar elastosis

Precautions to minimise damage caused by UV light: adherence to recommended exposure times; avoiding mid-day sun; minimising exposure during childhood; avoiding incidence of burning; understanding the electromagnetic spectrum and UV penetration and strength; consideration of SPF and star ratings; use of SPF in tanning products, skincare and makeup and year round protection; covering up eg hats, t-shirts; being skin aware (checking skin regularly); GP referral (changes in moles, appearance of new and unrecognisable blemishes and growths)
3 **Understand the causes and effects of degenerative disorders as a result of the ageing process**

*Causes of degenerative disorders:* causes eg hereditary, genetic, environmental

*Effects on body systems:* skeletal system eg decalcification, joint changes, osteoporosis, osteoarthritis, Paget’s disease, osteosarcoma, gout, arthritis; muscular system eg atrophy of mass; nervous system eg loss of neural tissue, Alzheimer’s, Parkinson’s, Huntingdon’s disease, motor neurone disease, multiple sclerosis; cardiovascular system eg myocardial infarction, stroke, hypertension; immune system eg decline in humoral immunity, autoimmune disease; respiratory eg senile emphysema

*Contraindications to beauty therapy treatments:* contraindications that prevent or restrict a treatment due to a degenerative disorder

4 **Understand how beauty therapy treatments and products may delay the ageing process**

*Ways treatments and products can delay the skin ageing process:* stimulates the dermal circulation; tones superficial muscle fibres; reduces the appearance of fine lines; hydrates the surface of the skin; reduces the appearance of pigmentation; stimulates sensory nerve endings; nourishes and delivers moisture to the epidermis

*Performance of beauty therapy treatments and products:* methods of evaluation eg test and consumer trials, market research, case studies, client reviews, surveys/questionnaires, comparing results against research claims, comparison of electrical versus manual treatments
# Learning outcomes and assessment criteria

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<td><strong>Learning outcomes</strong></td>
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<td><strong>On successful completion of this unit a learner will:</strong></td>
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| LO1 Understand the nature of ageing | 1.1 describe the characteristics of ageing  
1.2 explain the differences between intrinsic and extrinsic environmental effects on the skin which contribute to the ageing process  
1.3 critically compare different theories of ageing  
1.4 explain the ageing process in cells and tissues |
| LO2 Understand the causes and effects of ageing of the skin | 2.1 analyse the changes which occur to the repair mechanisms of the skin with ageing  
2.2 explain how ageing causes microscopic changes to the structure of skin  
2.3 evaluate the causes of changes to the skin when ageing  
2.4 explain pathological conditions of the skin which may occur as a result of ageing  
2.5 explain the ageing effect of UV on the skin  
2.5 recommend precautions to minimise damage caused by UV light |
| LO3 Understand the causes and effects of degenerative disorders as a result of the ageing process | 3.1 explain possible causes of degenerative disorders and their effects on the:  
- skeletal system  
- muscular system  
- nervous system  
- cardiovascular system  
- immune system  
- respiratory system  
3.2 describe contraindications to beauty therapy treatments when a degenerative disorder is present |
| LO4 Understand how beauty therapy treatments and products may delay the ageing process | 4.1 justify how beauty therapy treatments and products may delay the skin ageing process  
4.2 evaluate the performance of beauty therapy treatments and products considered to delay the ageing process |
Guidance

Links

This unit has particular links to the following units:

- Unit 10: Laser and Light Treatments for Skin Rejuvenation
- Unit 12: Human Health and Nutrition
- Unit 21: Chemistry of Hair and Beauty Products.

Essential requirements

Delivery

Tutors should deliver the unit content in the order suitable for their learners’ needs, and tutors do not have to deliver it in the order given within the unit content.

Assessment

Assessment should be as holistic as possible, with assignments designed to cover multiple assessment criteria, even across units, where appropriate. Reference to grading criteria should be integrated into the assessment documentation, to ensure criteria have been met.

It is expected that the outcomes will be achieved through a series of assignments, for example the results of theoretical research undertaken and use of case studies.

Resources

Learners will benefit from a well resourced teaching laboratory in order to view slides under a microscope, carry out tests and observe basic dissection.

Employer engagement and vocational contexts

A presentation by a cosmetic surgeon or dermatologist will expand the learners’ understanding of the structure and function of the skin, and the desire to reverse the signs of ageing. A visit to a laser treatment clinic, a facial skincare company or skincare clinic will raise awareness of the treatments available within the industry.