14.1 The Physiology of Stress and Stress-Related Illness: 30-minute Pack

AQA 7182 · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Outline two applications such as workplace stress reduction policies, early screening for cardiovascular risk, or interventions to improve sleep and immune function.

(Total for Question 1 is 2 marks)

2 Outline the three stages of Selye's GAS: alarm, resistance and exhaustion, with a brief feature of each.

(Total for Question 2 is 3 marks)

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3 Discuss the physiology of stress and its role in illness, using theory and empirical evidence and evaluating strengths and limitations.

(Total for Question 3 is 16 marks)

4 Apply stress physiology and Kiecolt-Glaser findings to explain Priya's slow wound healing and give one limitation of causal inference.

(Total for Question 4 is 6 marks)

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Mark scheme · 14.1 The Physiology of Stress and Stress-Related Illness: 30-minute Pack

Question 1

outlines one application, e.g. workplace stress reduction programmes to lower chronic cortisol exposure and reduce illness risk oe	**M1**
outlines a second application, e.g. screening and monitoring of blood pressure and lifestyle interventions for stressed patients to prevent cardiovascular disease oe	**M1**

Answer: Applications include workplace stress reduction policies to reduce chronic cortisol exposure and public health screening of stressed individuals for high blood pressure and lifestyle interventions to prevent cardiovascular disease.

Question 2

names the three stages: alarm, resistance and exhaustion oe	**M1**
explains alarm is the immediate fight-or-flight response involving adrenaline/cortisol oe	**A1**
explains resistance is where physiological responses are maintained to cope, and exhaustion follows when resources are depleted leading to illness oe	**A1**

Answer: GAS stages: alarm (immediate fight-or-flight response), resistance (sustained physiological arousal to cope) and exhaustion (resources depleted leading to vulnerability to illness).

Question 3

Level 4 Knowledge of stress physiology and stress-related illness is detailed and accurate. Discussion is thorough and evaluative, integrating theory and empirical evidence, and considers methodological issues, alternative explanations and real-world implications. Specific studies and mechanisms are applied to support points and evaluation is well developed and coherent, with clear specialist terminology.	**13-16**
Level 3 Knowledge is mostly accurate and relevant. Discussion includes strengths and limitations and refers to evidence and theory, but evaluation may be less thorough or slightly imbalanced. Some application to studies or implications is present. Specialist terms are used appropriately.	**9-12**
Level 2 Knowledge is present but limited in depth or detail. Discussion contains some evaluative points but these are simple or not well developed. Limited use of evidence or theory to support claims. Answer may be unstructured in places.	**5-8**
Level 1 Knowledge is minimal and answers are brief or fragmented. Little or no evaluation. Little use of relevant studies or theory. Specialist terminology may be missing or misused.	**1-4**
Level 0 No creditable content.	**0**

Indicative content:

- AO1: Describe physiological systems involved in stress: the sympathomedullary pathway producing adrenaline and noradrenaline for immediate fight-or-flight changes, and the HPA axis releasing cortisol for longer term stress responses.
- AO1: Outline Selye's general adaptation syndrome with its alarm, resistance and exhaustion stages as a model linking prolonged stress to illness.
- AO1: Describe mechanisms by which chronic cortisol and sympathetic activation can cause illness: immune suppression, raised blood pressure, metabolic changes and increased atherosclerosis risk.
- AO2: Kiecolt-Glaser et al. wound-healing studies provide empirical evidence that people under chronic stress or caregiving burden heal more slowly, demonstrating immune impact.
- AO3: Evaluate Selye's GAS: initial strength was unifying biological model and experimental animal evidence, but limitations include reliance on animal studies, simplistic stage model and lack of psychological appraisal; human stress responses are moderated by cognition and context.
- AO3: Evaluate Kiecolt-Glaser: strength is standardised wound procedure and objective immune measures, but many stress-illness studies are correlational and confounding variables such as health behaviours or medication may influence results, limiting causal claims.
- AO3: Consider individual differences in cortisol reactivity and coping styles; some individuals show exaggerated cortisol responses, others blunted responses, which affects vulnerability to illness and challenges universal predictions.
- AO3: Consider methodological issues such as ecological validity of laboratory stressors versus chronic real-world stress, ethical constraints on inducing long-term stress, and temporal validity of longitudinal versus cross-sectional designs.
- AO3: Practical implications include interventions to reduce chronic stress for public health, early screening for cardiovascular risk in high stress occupations and targeted support for vulnerable individuals, but applications must consider individual differences and the multifactorial nature of illness.
- AO3: Conclude by weighing evidence: physiological pathways plausibly link stress to illness, supported by experimental and longitudinal studies, yet causal claims require caution because of correlational evidence, individual variation and complexity of biopsychosocial interactions.

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Question 4

links chronic stress to elevated cortisol levels which can suppress immune function oe	**M1**
explains that suppressed immune function reduces leukocyte activity and cytokine signalling needed for tissue repair, slowing healing oe	**A1**
refers to Kiecolt-Glaser type evidence showing stressed caregivers had slower wound healing in an experimental wound study oe	**M1**
applies this to Priya by noting her long shifts and poor sleep resemble chronic stressors that could replicate the slower healing effect oe	**A1**
identifies an additional physiological mechanism such as elevated sympathetic activity increasing blood pressure which can impair microcirculation to the wound oe	**M1**
gives a limitation: many stress-illness studies are correlational so other factors like nutrition or medication could confound the association between stress and healing oe	**A1**

Answer: Chronic stress elevates cortisol which suppresses immune cells and cytokines needed for repair, and sympathetic overactivity can impair microcirculation, both slowing healing. Kiecolt-Glaser found caregivers healed more slowly, supporting this. However the research is often correlational and other factors such as sleep, diet, medication or smoking could confound the relationship, so causation is not certain.

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