Topic C: Physical Activity and HealthContent Area:ScienceCourse(s):IB Sports, Exercise & Health ScienceTime Period:4th Marking PeriodLength:5 weeks

Unit Overview

Hypokinetic disease: Students will learn to identify the impact of inactivity on the body and describe these various diseases and conditions.

Cardiovascular disease: Students will apply their knowledge of the cardiovascular system in order to explain risk factors for cardiovascular disease and the link between these and physical inactivity, especially in certain populations.

Physical activity and obesity: Students will apply their knowledge of nutrition and metabolism in order to explain risk factors for obesity and the health consequences associated with it as well as populations prone to it.

Physical activity and type 2 diabetes: Students will apply their knowledge of diabetes in order to explain the risk factors for type 2 diabetes, risk factors for it and its health consequences.

Physical activity and bone health: Students will apply their knowledge of the skeletal system in order to discuss the relationship between physical activity and bone health.

Prescription of exercise for health: Students will apply their knowledge of the benefits of physical activity to outline guidelines to promote wellness as well as address potential barriers to physical activity for particular populations.

Exercise and psychological well-being: Students will apply the knowledge of the benefits of physical activity to outline the psychological effects on mood and well-belling.

STAGE 1- DESIRED RESULTS

2020 New Jersey Student Learning Standards- Science

DCI: HS-LS1-2, HS-LS1-3, HS-LS1-6

CCC: Cause & Effect, Systems and System Models, Energy and Matter, Structure and Function, Stability and Change

S&EP: Asking questions/defining problems, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations, engaging in argument from evidence, obtaining, evaluating & communicating information

Essential Questions

How can physical activity impact our physical and mental health and wellness?

Enduring Understanding

Students will learn the detriments of inactivity associated with hypokinetic diseases in order to recommend physical activity for the promotion of mental and physical health and well-being.

Students will know...

Vocabulary: habitual physical activity, exercise, sports, physical fitness, hypokinetic disease, coronary heart disease, stroke, hypertension, obesity, type 2 diabetes, type 1 diabetes, osteoporosis, Westernized living, coronary circulation, atherosclerosis, plaque, hypertension, HDL/LDL cholesterol, obesity, gender, ethnicity, family history, risk factor, Body Mass Index (BMI), cardiovascular disease, osteoarthritis, cancer, energy balance, resting metabolic rate, basal metabolic rate (BMR), body composition, adipose, appetite regulation, leptin, insulin, saturated fat, bone density, osteoporosis, osteoporotic fractures, secondary complications, pneumonia, ectomorph, estrogen, menopause, female triad, World Health Organization (WHO), mood, neurotransmitters, self-esteem, anxiety, depression, environmental barriers, demographic, cognitive, adherence

Students will be able to...

C.1.1 distinguish between the terms habitual physical activity,

exercise, sports, and physical fitness

C.1.2 define the term hypokinetic disease

C.1.3 outline the following hypokinetic diseases: coronary heart disease, stroke, hypertension, obesity, type 2 diabetes, and osteoporosis

C.1.4 discuss how studies of different populations provide evidence of the link between physical activity and hypokinetic disease

C.1.5 discuss the relationship between major societal changes and hypokinetic disease

- C.2.1 outline the coronary circulation
- C.2.2 outline what is meant by the term atherosclerosis
- C.2.3 list the major risk factors for cardiovascular disease
- C.2.4 explain the concept of risk factors in cardiovascular disease
- C.2.5 discuss how a lifestyle of physical inactivity increases

the risk of cardiovascular disease

- C.3.1 describe how obesity is determined
- C.3.2 outline the major health consequences of obesity
- C.3.3 discuss the concept of energy balance

C.3.4 outline how chemical signals arising from the guy and from the adipose tissue affect appetite regulation

- C.4.1 compare type 1 and type 2 diabetes
- C.4.2 discuss the major risk factors for type 2 diabetes
- C.4.3 outline the health risks of diabetes
- C.5.1 outline how bone density changes from birth to old age
- C.5.2 describe the risk of osteoporosis in males and females
- C.5.3 outline the longer-term consequences of osteoporotic fractures
- C.5.4 discuss the major risk factors for osteoporosis
- C.5.5 discuss the relationship between physical

activity and bone health

C.6.1 outline physical activity guidelines for

promotion of good health

C.6.2 describe the aim of exercise in individuals

with a hypokinetic disease

C.6.3 discuss the potential barriers to physical activity

Formative Assessment

- 3- Minute Pause
- A-B-C Summaries
- Analogy Prompt
- Choral Response
- Debriefing
- Exit Card / Ticket
- Hand Signals
- Idea Spinner
- Index Card Summaries
- Inside-Outside Circle Discussion (Fishbowl)
- Journal Entry
- Misconception Check
- Observation
- One Minute Essay
- One Word Summary
- Portfolio Check
- Questions & Answers
- Quiz
- Self-Assessment
- Student Conference
- Think-Pair-Share
- Web or Concept Map

Authentic Assessments

Research/Jigsaw – hypokinetic diseases: coronary heart disease, stroke, hypertension, obesity, type 2 diabetes and osteoporosis

Discuss – impact of lifestyle on physical activity, explore impact of Western culture and technology on physical activity

Label/Draw – coronary circulation, identify major chambers and vessels of the heart

Summarize – risk factors of cardiovascular disease from a variety of articles and journals, in particular the significance of having more than one risk factor, in particular physical inactivity as a risk factor

Analyze – sample data to determine obesity based on body fat, BMI, waist girth, body composition, discussing which is most accurate determiner of influence on health

Investigate – energy balance using PhET "Eating & Exercise" to discuss positive and negative energy balance

Draw – flowchart/diagram to illustrate how hormones from the gut regulate appetite

T-chart – compare type 1 and type 2 diabetes in terms of metabolism, treatment, impact on overall health, causes (focusing on risk factors for type 2 diabetes)

Diagram – identify changes in skeleton from birth through old ages with a special focus on bone density

Research - osteoporosis focusing on risk factors, long term impact on health and lifestyle

Develop – exercise and diet plan for optimal bone health

Identify – current recommendations for minimal levels of physical activity as outline by the World Health Organization (WHO)

Defend – claims that exercise promotes physical and mental health by creating a commercial convincing the audience that exercise is an essential part of optimal physical health and emotional well-being, including goals for those already affected by hypokinetic disease and addressing potential barriers (physical, personal & environmental) to physical activity

 $\ensuremath{\text{Evaluate}}$ – exercise adherence strategies and outline the potential negative aspects of adherence

Benchmark Assessments

C.1 Quiz C.2 Quiz C.3 Quiz C.4 Quiz C.5 Quiz C.6 Quiz UNIT C TEST (comprised of Paper 3 type

questions)

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Instructional Map:

Preview "I can" statements to identify learning objectives

Learn impact of physical activity on health and well-being

Learn details of hypokinetic diseases

Apply knowledge of impact of physical activity to propose exercise plan to remediate and prevent hypokinetic diseases

Review "I can" statements to self-assess knowledge

Modification/Differentiation of Instruction

Differentiation Strategies for Special Education Students

- Remove unnecessary material, words, etc., that can distract from the content
- Use of off-grade level materials
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Time allowed
- Level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in "chunks"
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Varied homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Ability to work at their own pace

- Present ideas using auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment
- Differentiated checklists and rubrics, if available and appropriate

Differentiation Strategies for Gifted and Talented Students

- Increase the level of complexity
- Decrease scaffolding
- Variety of finished products
- Allow for greater independence
- Learning stations, interest groups
- Varied texts and supplementary materials
- Use of technology
- Flexibility in assignments
- Varied questioning strategies
- Encourage research
- Strategy and flexible groups based on formative assessment or student choice
- Acceleration within a unit of study
- Exposure to more advanced or complex concepts, abstractions, and materials
- Encourage students to move through content areas at their own pace
- After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
- Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

Differentiated Strategies for ELL Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in "chunks"
- Varied texts and supplementary materials, including visuals
- Use technology, if available and appropriate
- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Allow students to work at their own pace

- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Role play
- Provide graphic organizers, highlighted materials
- Strategy and flexible groups based on formative assessment

Differentiation Strategies for At Risk Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in "chunks"
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment

504 Plans

Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:

- walk, breathe, eat, or sleep
- communicate, see, hear, or speak
- read, concentrate, think, or learn
- stand, bend, lift, or work

Examples of accommodations in 504 plans include:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials

- behavior management support
- adjusted class schedules or grading
- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits
- occupational or physical therapy

Peer Tutoring

Repeated Drill and Practice

Cooperative Grouping

Teacher notes

Use of additional reference materials

Modification Strategies

- Cooperative Grouping
- Extended Time
- Frequent Breaks
- Highlighted Text
- Interactive Notebook
- Modified Test
- Oral Directions
- Peer Tutoring
- Preferential Seating
- Re-direct
- Repeated Drill and Practice
- Shortened Assisgnment
- Teacher Notes
- Tutorials
- Use of Additional Reference Materials
- Use of Audio Resources

High Preparation

- Alternative Assessments
- Choice Boards
- Games and Tournaments
- Group Investigations
- Guided Reading
- Independent Research / Project
- Interest Groups
- Learning Contracts
- Leveled Rubrics
- Literature Circles
- Multiple Intelligence Options
- Multiple Texts
- Personal Agendas
- Project Based Learning (PBL)
- Stations / Centers
- Think-Tac-Toe
- Tiered Activities / Assignments
- Varying Graphic Organizers

Low Preparation

- Choice of Book / Activity
- Cubing Activities
- Exploration by Interest (using interest inventories)
- Flexible Grouping
- Goal Setting With Student
- Homework Options
- Jigsaw
- Mini Workshops to Re-teach or Extend Skills
- Open-ended Activities
- Think-Pair-Share by Readiness, Interest, or Learning Style
- Use of Collaboration

- Use of Reading Buddies
- Varied Journal Prompts
- Varied Product Choice
- Varied Supplemental Materials
- Work Alone / Together

Horizontal Integration- Interdisciplinary Connections

See Appendix

Vertical Integration- Discipline Mapping

9th grade – Biology 10th grade – Chemistry 11th grade – Anatomy & Physiology 12th grade – Physics

Additional Materials

Sports, Exercise and Health Science by Oxford University Press