| Wall Township Public Schools | Board Approval Date: 8/20/2024 |
|---|---|
| **Course Title: Sports Medicine** | |
| **Course Description: Sports Medicine offers students an introduction to the broad field of sports medicine. In this course, students learn about various medical careers related to sports medicine, with an emphasis on athletic training. Students learn the roles and responsibilities of the athletic trainer, including techniques for preventing sport related injuries, recognition of specific injuries and conditions, and care and rehabilitation of those injuries. Lessons combine current research, hands on experience, and scenario-based skill practice to maximize student learning.** | |

New Jersey Student Learning Standards - Science (Click here to skip below to a description about the Standards)

## Course Sequence & Pacing

| Unit Title | Estimated Number of Instructional Periods |
|---|---|
| Unit 1 - Introduction to Sports Medicine | 16 |
| Unit 2 - Nutrition for Athletes | 20 |
| Unit 3 - Strength and Conditioning | 25 |
| Unit 4 - Musculoskeletal Injuries and Rehabilitation | 25 |

| | |
|---|---|
| Unit 5 - Concussions and Spinal Cord Injuries (SCIs) | 20 |
| Unit 6 - Performance Enhancing Drugs (PEDs) and Drug Testing | 20 |

# Unit # 1

## Stage 1 Desired Results

**Unit #1: Introduction to Sports Medicine**

**Unit Summary:** This unit provides students with a general overview of the field of sports medicine with an emphasis on athletic training. Students will be introduced to the responsibilities of the athletic trainer in preventing, identifying, and rehabilitating injuries, as well as other professionals that fall under the umbrella of sports medicine. This unit also covers the basics of emergency care as well as the consideration of environmental conditions that may affect athlete safety.

## Unit #1 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

**Science and Engineering Practices:**
Asking Questions and Defining Problems
Construction Explanations and Designing Solutions
Using Mathematics and Computational Thinking

**Cross Cutting Concepts:**
Cause and Effect: Mechanism and Explanation

| **Unit Enduring Understandings:** | **Unit Essential Questions:** |
|---|---|

| | |
|---|---|
| • Athletic trainers are healthcare professionals who specialize in preventing, recognizing, and rehabilitating sports injuries; they work with a number of different professionals who fall under the umbrella of sports medicine.<br>• Athletic trainers provide emergency medical care for athletes when needed; they also monitor environmental conditions that affect athlete safety.<br>• A great deal of care must be taken in following athletic training procedures that conform to the legal guidelines governing the privacy of health information as well as liability for negligence | • What are the roles of the athletic trainer?<br>• What other medical and nonmedical professionals do athletic trainers interact with?<br>• What types of emergency situations must an athletic trainer be prepared for?<br>• How do environmental conditions affect athlete safety?<br>• How can the athletic trainer protect student privacy?<br>• What steps can the athletic trainer take to reduce the risk of litigation for negligence? |
| **Vocabulary:** athletic trainer, sports medicine, emergency care, emergency action plan, heat exhaustion vs. heat stroke, sudden cardiac arrest, defibrillation, liability, negligence, misfeasance, malfeasance, nonfeasance, health insurance, HMO, PPO, POS | |
| **Interdisciplinary Connections** | |
| **Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:<br>9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth.<br>9.2.12.CAP.4: Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.<br>9.2.12.CAP.5: Assess and modify a personal plan to support current interests and postsecondary plans.<br>9.2.12.CAP.7: Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.<br>9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors. | |

9.2.12.CAP.10: Identify strategies for reducing overall costs of postsecondary education (e.g., tuition assistance, loans, grants, scholarships, and student loans)

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities

9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving

9.4.12.DC.7: Evaluate the influence of digital communities on the nature, content and responsibilities of careers, and other aspects of society.

9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions

9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.

**Computer Science & Design Thinking (***CS & DT***):**

8.2.12.ED.2: Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback.

8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).

8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).

8.2.12.NT.2: Redesign an existing product to improve form or function.

9.1.12.RM.1: Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, strategies to lower costs, and the process for filing an insurance claim.

9.1.12.RM.2: Determine when and why it may be appropriate for the government to provide insurance coverage rather than private industry.

9.1.12.RM.5: Explain what self-insuring is and determine when it is appropriate.

**NJSLS Companion Standards - ELA**

**RI.CR.11-12.1**

Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a

comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.

**RI.CR.11-12.8**
Delineate and evaluate the reasoning in texts, including the validity of the reasoning and the relevance and sufficiency of the evidence.

**RI.MF.11-12.6**
Analyze, integrate, and evaluate multiple sources of information presented in different media or formats in order to address a question or solve a problem.

**W.WR.11-12.5**
Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

**W.IW.11-12.2**
Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

**Connections to NJSLS - Mathematics**
HSS-IC.B.6 Evaluate reports based on data.
MP.4 Model with mathematics

## Unit #1 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - Introduction to sports medicine quiz
  - Responsibilities of the athletic trainer quiz
  - Legal terms & scenarios quiz
  - Types of insurance quiz

- Case study questions
    - Damar Hamlin sudden cardiac arrest
- Article questions
- Project check-ins
- Warm ups
- Exit tickets
- Alternative/ Modified Assessment

**Summative Assessments: (includes alternative assessments where applicable)**

- Sports medicine career project
- Athletic Training Facility Design & Budget Development

***Common Benchmark Assessment**

## Unit #1 Stage 3 Learning Plan

**Potential Unit Launches:**

- (PBL) Damar Hamlin sudden cardiac arrest case study - How did athletic trainers and other professionals respond to this emergency situation? What was the role of each individual?

**Potential Supporting Lessons:**

- SWBAT describe the goals of the field of sports medicine
- SWBAT summarize the roles and responsibilities of the athletic trainer
- SWBAT explain the process for attaining national certification and state licensure for athletic training
- SWBAT describe the roles of other medical and nonmedical professionals in the field of sports medicine
- SWBAT compare and contrast various professional organizations dedicated to athletic training and sports medicine
- SWBAT evaluate the effect of environmental conditions such as heat, cold, and lightning on athlete health and safety
- SWBAT describe the proper emergency response protocol for different on-field scenarios
- SWBAT design a new high school athletic training facility
- SWBAT develop a budget in Google Sheets for the equipment and consumable supplies needed for a new high

school athletic training facility
- SWBAT evaluate the pros and cons of different health insurance plans for athletes
- SWBAT determine whether or not negligence has occurred in different athletic training scenarios.

**Potential Summative Assessments:**
- Develop an emergency action plan (EAP) for a specific sport and venue.

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**
- *Essentials of Athletic Injury Management*, 8th edition, © 2010, William E. Prentice, PhD, ATC, PT, FNATA
- The National Athletic Trainer's Association (NATA) https://www.nata.org/
- The Secondary School Sports Medicine Course Outline (NATA)
- NSCA Strength and Conditioning Manual

## Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

**Specific Strategies and Practices that Support Students with Disabilities:**
Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback

**Unit 1: Introduction to Sports Medicine**

- Project checklist and rubric for sports medicine career project, one to one feedback on student progress

**Specific Strategies and Practices that Support English Language Learners**
English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

Unit 1: Pre-teaching of vocabulary and concepts - Personal Glossary

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**
Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**
It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

## Unit # 2

## Stage 1 Desired Results

**Unit #2: Nutrition for Athletes**

**Unit Summary:** This unit explores the critical role of nutrition in optimizing athletic performance and supporting the overall health and well-being of athletes. It covers the principles of sports nutrition, including macronutrients, micronutrients, hydration, and supplementation. Students will learn how different nutrients impact energy levels, muscle function, recovery, and injury prevention.

## Unit #2 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within a multicellular organism

HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy

**Science and Engineering Practices:**

Engaging in Argument from Evidence

Using Mathematics and Computational Thinking

Obtaining, Evaluating and Communicating Information

**Cross Cutting Concepts:**

Cause and Effect: Mechanism and Explanation

Energy and Matter

Structure and Function

| **Unit Enduring Understandings:** | **Unit Essential Questions:** |
| --- | --- |
| • Proper nutrition enhances athletic performance and recovery, and helps prevent injury, by providing the body with energy, supporting | • Why does the body need each macronutrient and micronutrient? |

| | |
|---|---|
| muscle growth and repair, and improving one's overall health. Recommended amounts are tailored to individual athletes based on biological sex, sport, position, and goals.<br>• Adequate hydration is crucial for maintaining proper fluid balance, regulating body temperature, preventing injury, and supporting physical performance.<br>• A nutritious diet that consists of a variety of foods will meet the recommended amounts of all macronutrients and micronutrients, and should not require supplementation. | • How much of each macronutrient and micronutrient is needed to support one's health and athletic performance?<br>• What kinds of foods should an athlete consume to ensure that they are getting all the required nutrients?<br>• What (and when) should an athlete eat before and after competition to enhance performance and recovery?<br>• How much water does an individual athlete need to consume to ensure proper hydration?<br>• Should athletes take nutritional supplements? |
| **Vocabulary:** nutrition, diet, calories, macronutrient, hydration, micronutrient, vitamins, minerals, supplement | |
| **Interdisciplinary Connections** | |
| **Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:<br>9.2.12.CAP.4: Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.<br>9.2.12.CAP.7: Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.<br>9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions<br>9.4.12.IML.8: Evaluate media sources for point of view, bias, and motivations.<br>9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities<br>9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data. | |
| **Computer Science & Design Thinking (***CS & DT***):** | |

| |
|---|
| 8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change. |
| **NJSLS Companion Standards - ELA**<br>RI.CR.11-12.1<br>Accurately cite a range of thorough textual evidence to support analysis of scientific and technical texts related to nutrition and human physiology.<br>RI.CR.11-12.8<br>Delineate and evaluate the reasoning and evidence in texts addressing nutrition claims and dietary recommendations.<br>RI.MF.11-12.6<br>Analyze and integrate quantitative, visual, and multimedia information (charts, data tables, documentaries) to address questions about athletic nutrition.<br>W.IW.11-12.2<br>Write informative/explanatory texts examining nutritional needs, dietary plans, and physiological impacts.<br>W.WR.11-12.5<br>Conduct short and sustained research projects to evaluate nutritional supplements and dietary strategies.<br>SL.PE.11-12.4<br>Present information, findings, and supporting evidence clearly, logically, and appropriately for the intended audience and task.<br>SL.UM.11-12.5<br>Make strategic use of digital media to enhance understanding of findings, reasoning, and evidence. |
| **Connections to NJSLS - Mathematics**<br>MP.2 Reason abstractly and quantitatively.<br>MP.4 Model with mathematics.<br>HSS-IC.B.6 Evaluate reports based on data. |

## Unit #2 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - Macronutrients quiz
  - Micronutrients quiz
  - Nutrition diary reflection
- Warm ups
- Exit tickets
- Project check-ins
- Article questions
- Summary charts
- Alternative/ modified assessment

**Summative Assessments: (includes alternative assessments were applicable)**

- **Nutrition toolkit for athletes project**
- **Supplement research project**

***Common Benchmark Assessment**

## Unit #2 Stage 3 Learning Plan

**Potential Unit Launches:**

- Video: What it Takes to Feed the New England Patriots
- Video: What does an Olympic Athlete Eat?
- Evaluate the information presented in the documentary *Game Changers* - Does a vegan diet really optimize athletic performance and health?

**Potential Supporting Lessons:**

- SWBAT explain the function of each macronutrient in the body
- SWBAT explain the function of each micronutrient in the body
- SWBAT predict the effect of a deficiency in a specific nutrient

- SWBAT analyze the nutrient content of a specific food
- SWBAT calculate the recommended amount of each required nutrient for themselves
- SWBAT analyze the effects of dehydration and overhydration on the body
- SWBAT create a nutrition toolkit for athletes at WHS
- SWBAT design a proper pre-competition and post-competition meal
- SWBAT to evaluate the effectiveness and safety of a specific nutritional supplement

**Potential Summative Assessments:**

- Develop a meal plan that meets the nutritional requirements for a specific athlete

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**

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- The National Athletic Trainer's Association (NATA) https://www.nata.org/
- The Secondary School Sports Medicine Course Outline (NATA)
- NSCA Strength and Conditioning Manual

## Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

**Specific Strategies and Practices that Support Students with Disabilities:**

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- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback

**Unit 2: Nutrition for Athletes**

- Graphic organizers for macronutrients and micronutrients

**Specific Strategies and Practices that Support English Language Learners**

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.
Unit 2: Simplified/Verbal Instructions - Frequent Breaks - Visual learning, including graphic organizers

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**

Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

# Unit # 3

## Stage 1 Desired Results

**Unit #3: Strength and Conditioning**

**Unit Summary:** This unit will introduce students to the principles and practices of strength training and conditioning as they relate to sports medicine. Students will explore the physiological responses and adaptations to exercise in the muscular, cardiovascular, and respiratory systems. They will learn how different types of training methods affect these systems and contribute to improvements in strength, power, and endurance. Students will also learn about the role of a proper warm up and cool down, as well as flexibility, in optimizing performance and preventing injury.

## Unit #3 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells
HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within a multicellular organism
HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy
HS-LS2-3 Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions

**Science and Engineering Practices:**
Analyzing and Interpreting Data
Developing and Using Models
Obtaining, Evaluating and Communicating Information

**Cross-Cutting Concepts:**
Cause and Effect: Mechanism and Explanation
Energy and Matter
Structure and Function

**Unit Enduring Understandings:**

- A strength and conditioning program for a specific sport should prepare the athlete for high-level performance while helping prevent injuries inherent to that sport
- A proper warm up will prepare the athlete for competition and help prevent injuries
- Physiological adaptations in the muscular, cardiovascular and respiratory systems occur in response to training and improve athletic performance
- Mental preparation for athletes is also essential for optimizing athletic performance

**Unit Essential Questions:**

- How do you design a proper strength and conditioning program?
- What does a proper warm up and cool down look like?
- Which is better: static or dynamic stretching?
- How do our muscles become bigger and stronger?
- How does conditioning improve cardiorespiratory fitness?
- How does an athlete's mental state affect athletic performance?

**Vocabulary:** individuality, specificity, overload, progression, diminishing returns, reversibility, warm-up, cool down, physiological adaptations, dynamic stretching vs. static stretching, muscle fibers, myofibrils, actin, myosin, sarcomere, sliding filament theory, resistance training, strength, power, endurance, reps, sets, concentric, eccentric, isometric, isotonic exercises, functional training, core, calisthenics, cardiorespiratory training, ATP-PC system, anaerobic glycolysis, aerobic glycolysis, VO2 max

**Interdisciplinary Connections**

**Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:

9.2.12.CAP.4: Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.

9.2.12.CAP.7: Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.

9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources

9.4.12.IML.8: Evaluate media sources for point of view, bias, and motivations.

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities.

**Computer Science & Design Thinking (***CS & DT***):**

8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

8.2.12.NT.2: Redesign an existing product to improve form or function.

**NJSLS Companion Standards - ELA**

**RI.CR.11-12.1**

Accurately cite textual evidence to support analysis of informational texts related to training methods, muscle physiology, and conditioning principles.

**RI.CR.11-12.8**

Evaluate the reasoning and evidence presented in scientific texts addressing strength training and conditioning practices.

**W.IW.11-12.2**

Write informative/explanatory texts describing physiological adaptations, training principles, and experimental findings.

**W.WR.11-12.5**

Conduct research projects to design and justify strength and conditioning programs based on evidence.

**W.SE.11-12.6**
Gather relevant information from multiple authoritative sources, assess credibility, and integrate information appropriately.

**Connections to NJSLS - Mathematics**
HSS-IC.B.6 Evaluate reports based on data.
MP.4 Model with mathematics

## Unit #3 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - Sarcomere model
  - Muscle structure & function quiz
  - Strength training quiz
  - VO2 max lab
  - Cardiorespiratory training quiz
- Warm ups
- Exit tickets
- Project check-ins
- Article questions
- Summary charts
- Alternative/ Modified Assessment

**Summative Assessments: (includes alternative assessments were applicable)**

- **Warm up design for a specific sport**
- **Development of a strength training program for a specific sport**

***Common Benchmark Assessment**

## Unit #3 Stage 3 Learning Plan

**Potential Unit Launches:**

- Video: Building strength and character: Michigan made: football - class discussion on training methods observed
- Video: 800m pre-season training with Nick Symmonds - class discussion on training methods observed
- Students identify and explain the National Strength & Conditioning Association's (NSCA) strength and conditioning principles

**Potential Supporting Lessons:**

- SWBAT summarize the NSCA strength & conditioning principles.
- SWBAT describe the essential components of a proper warm up, and evaluate whether static or dynamic stretching is more appropriate for a warm up routine.
- SWBAT design an appropriate warm-up routine for a specific sport.
- SWBAT to describe the structure of a muscle at the macroscopic and microscopic level.
- SWBAT to model the sliding filament theory for muscle contraction.
- SWBAT to differentiate between the causes of muscle fatigue and muscle soreness.
- SWBAT to explain how strength training improves muscular strength and endurance.
- SWBAT to describe the basic components of a properly designed strength training program.
- SWBAT to evaluate the effect of different types of strength training methods on muscular strength and endurance.
- SWBAT to design a strength training program for a specific sport.
- SWBAT to describe the basic components of the cardiovascular and respiratory systems.
- SWBAT to compare the 3 types of energy systems used by the body in terms of timing, ATP production, and oxygen use.
- SWBAT explain what an individual's VO2 max is and how it can be used to measure cardiorespiratory fitness.
- SWBAT measure their VO2 max using indirect measurements.
- SWBAT evaluate the effect of different types of conditioning methods on cardiorespiratory fitness.
- SWBAT summarize the muscular and cardiorespiratory adaptations that occur in response to training.

- SWBAT describe strategies that improve one's mental state to optimize athletic performance.

Potential Summative Assessments

- Construct a physiological adaptations to training poster

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**

- *Essentials of Athletic Injury Management*, 8th edition, © 2010, William E. Prentice, PhD, ATC, PT, FNATA
- The National Athletic Trainer's Association (NATA) https://www.nata.org/
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## Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

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- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback

**Unit 3: Strength & Conditioning**

- Scaffolding for strength and conditioning program development; guiding questions for developing a proper strength and conditioning program

**Specific Strategies and Practices that Support English Language Learners**
English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.
Unit 3: Use of cognates to increase comprehension - Teacher modeling - Pairing students with beginning English language

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**
Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**
It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

# Unit # 4

## Stage 1 Desired Results

**Unit #4 : Musculoskeletal Injuries and Rehabilitation**

**Unit Summary:** The musculoskeletal system includes the framework of bones, as well as the muscles, joints and connective tissues that support and move the body. Understanding the anatomy and physiology of both the skeletal

and muscular systems is essential for understanding the causes of sports-related injuries, as well as the methods utilized for the prevention and rehabilitation of those injuries. The rehabilitation process may be enhanced by therapeutic modalities that target or accelerate specific aspects of the healing process.

## Unit #4 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within a multicellular organism
HS-LS1-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms

**Science and Engineering Practices:**

Asking Questions and Defining Problems
Developing and Using Models
Construction Explanations and Designing Solutions
Engaging in Argument from Evidence

**Cross-Cutting Concepts:**

Cause and Effect: Mechanism and Explanation
Structure and Function

| **Unit Enduring Understandings:** | **Unit Essential Questions:** |
| --- | --- |
| • Athletic trainers muscle possess an understanding of the appropriate medical terminology, and the anatomy & physiology of the musculoskeletal system, in order to identify, diagnose, and treat musculoskeletal injuries | • How does an athletic trainer describe the precise location of an injury?<br>• How does the structure of a bone allow it to support the body?<br>• How are joints classified?<br>• How do bones and muscles work together to move our joints? |

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| • The skeletal system supports the body and protects organs; bones also serve as levers for the muscle to pull on to cause movements at joints<br>• Musculoskeletal injuries may occur due to sudden trauma, improper technique, or due to repetitive movements or actions that occur over a long period of time<br>• The phases of the healing process occurs sequence but overlap one another in a continuum; specific modalities and rehabilitation techniques can be used to aid in the healing process | • What are the most common types of musculoskeletal injuries that occur in sports?<br>• What modalites or rehabilitation methods can be used to help speed up the healing process for a specific type of injury? |
| **Vocabulary:** musculoskeletal system, skeletal system, epiphysis, diaphysis, spongy bone, compact bone, medullary cavity, epiphyseal plate, periosteum, endosteum, bone marrow, osteons, fractures, open vs. closed fractures, displaced vs. nondisplaced fractures, stress fractures, diarthrotic joints, synarthrotic joints, amphiarthrotic joints, synovial joints, chronic vs. acute injury, hard vs. soft tissue injury, trauma, tendonitis, bursitis, muscle tear, ligament strain, dislocation, cartilage injuries, osteoarthritis, peripheral nerve damage, contusion, inflammatory response, rehabilitation, modality, RICE, cryotherapy, electrotherapy, cupping | |
| **Interdisciplinary Connections** | |
| **Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:<br>9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities.<br>9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.<br>9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving.<br>9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources.<br>9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions. | |

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| 9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience. |
| **Computer Science & Design Thinking (***CS & DT***):**<br>8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change. |
| **NJSLS Companion Standards - ELA**<br>**RI.CR.11-12.1**<br>Accurately cite evidence from scientific and medical texts to support analysis of musculoskeletal injuries and rehabilitation strategies.<br>**RI.MF.11-12.6**<br>Analyze and integrate information from diagrams, X-rays, data sets, and texts to address injury diagnosis and treatment.<br>**RI.CR.11-12.8**<br>Delineate and evaluate the reasoning and evidence used in texts describing injury prevention and rehabilitation modalities.<br>**W.IW.11-12.2**<br>Write informative/explanatory texts describing anatomical structures, injury mechanisms, and rehabilitation techniques.<br>**SL.PE.11-12.4**<br>Present findings and explanations using appropriate organization, evidence, and technical vocabulary.<br>**SL.UM.11-12.5**<br>Use digital media strategically to enhance presentations on injuries, treatments, and rehabilitation outcomes. |
| **Connections to NJSLS - Mathematics**<br>HSS-IC.B.6 Evaluate reports based on data.<br>HSS-IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population. |

## Unit #4 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - Anatomical terms quiz
  - Long bone model
  - Long bone anatomy quiz
  - Skeleton labeling quiz
  - Joints activity
  - Muscle labeling quiz
  - Common musculoskeletal injuries quiz
- Warm ups
- Exit tickets
- Project check-ins
- Article questions
- Summary charts
- Modified assessments/ projects

**Summative Assessments: (includes alternative assessments were applicable)**

- Life-Sized Skeleton Project
- Musculoskeletal Injury Presentation

***Common Benchmark Assessment**

## Unit #4 Stage 3 Learning Plan

**Potential Unit Launches:**

- Class discussion - What “battle wounds” have you experienced as an athlete? Describe how it happened (mode of injury - MOI) and name the exact tissues/body parts that were damaged. How did medical professionals help you rehabilitate/heal this injury? Have you had any problems with this injury since it first occurred?
- Article: Why are chronic/overuse injuries more common in young athletes these days? What can be done to reverse this trend?

**Potential Supporting Lessons:**

- SWBAT use the correct anatomical vocabulary to describe the location of an injury.
- SWBAT construct a model of a long bone, and describe the structure and function of each of the major components.
- SWBAT to identify the major bones and muscles located throughout the human body.
- SWBAT to classify the type of bone fracture that occurred based on appearance (from an X-Ray) and mode of injury.
- SWBAT to describe the anatomy and physiology of the major classes of joints (fibrous, cartilaginous, synovial).
- SWBAT to classify synovial joints in the appropriate category (hinge, condyloid, plane, ball and socket, saddle) based on construction and range of motion.
- SWBAT to differentiate between soft and hard tissue injuries, as well as acute and chronic injuries.
- SWBAT to differentiate between the most common types of musculoskeletal injuries that occur in sports.
- SWBAT to describe the steps of the healing process.
- SWBAT to evaluate the effectiveness of the use of a specific modality in the rehabilitation process.

Potential Summative Assessments

- Evaluation of a specific modality (cryotherapy, cupping, electric stim, etc....) used in the rehabilitation process

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**

- *Essentials of Athletic Injury Management*, 8th edition, © 2010, William E. Prentice, PhD, ATC, PT, FNATA
- The National Athletic Trainer’s Association (NATA) https://www.nata.org/

- The Secondary School Sports Medicine Course Outline (NATA)
- NSCA Strength and Conditioning Manual

## Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

**Specific Strategies and Practices that Support Students with Disabilities:**
Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback

**Unit 4: Musculoskeletal Injuries and Rehabilitation**

- Guiding questions and summary chart for musculoskeletal injuries; template for musculoskeletal injuries

**Specific Strategies and Practices that Support English Language Learners**
English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.
Unit 4: Scaffolding - Word walls -

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**

Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**
It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

# Unit # 5

## Stage 1 Desired Results

**Unit #5: Concussions and Spinal Cord Injuries (SCIs)**

**Unit Summary:** Concussions are mild traumatic brain injuries that occur frequently in sports as a result of a blow or a jolt to the head. This type of injury must be recognized and managed properly by the athletic trainer in order to protect the athlete's health and well-being. Repeated concussions, or sub-concussive impacts to the head, can lead to long-term consequences such as chronic headaches, cognitive problems, depression, and more serious conditions such as chronic traumatic encephalopathy (CTE). Spinal cord injuries (SCIs) are life threatening and life changing injuries that result in loss of sensation and/or motor control below the site of injury. This type of injury must be recognized and managed correctly in order to minimize injury to the athlete.

## Unit #5 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within a multicellular organism

**Science and Engineering Practices:**
Analyzing and Interpreting Data
Constructing Explanations and Designing Solutions
Engaging in Argument from Evidence
Obtaining, Evaluating and Communicating Information

**Cross-Cutting Concepts:**
Cause and Effect: Mechanism and Explanation
Structure and Function

| **Unit Enduring Understandings:** | **Unit Essential Questions:** |
|---|---|
| • A concussion occurs when an impact to the head or body causes the brain to jolt within the skull; repeated concussions can lead to long-term health consequences such as chronic traumatic encephalopathy or CTE<br>• Spinal cord injuries (SCIs) result from fractures or dislocations to the spinal column; the degree and location of damage determines loss of motor control and sensation below the injury | • How does a concussion affect an athlete's health and well-being?<br>• How can an athletic trainer determine whether or not an athlete has experienced a concussion?<br>• What is the proper way to manage an athlete who has suffered a concussion?<br>• What is the proper way to respond to a potential spinal cord injury on the field?<br>• Can a spinal cord injury heal? |

**Vocabulary:** central nervous system, cerebrum, cerebellum, diencephalon, brain stem, meninges, gray vs. with matter, concussion, chronic traumatic encephalopathy (CTE), SCAT5, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, spinal cord, ventral horns, lateral horns, dorsal horns, ventral and dorsal roots, spinal nerves, spinal cord injury (SCI), complete vs. incomplete SCI, tetraplegia, paraplegia, stem cell therapy

**Interdisciplinary Connections**

**Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities.

9.2.12.CAP.4: Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.

9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

**Computer Science & Design Thinking (***CS & DT***):**

8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

**NJSLS Companion Standards - ELA**

**RI.CR.11-12.1**

Accurately cite textual evidence to support analysis of scientific texts related to neurological injuries and long-term health impacts.

**RI.MF.11-12.6**

Integrate and evaluate information from multiple media formats (case studies, data sets, documentaries) to address concussion management and SCI response.

**W.IW.11-12.2**

Write informative/explanatory texts examining injury mechanisms, symptoms, treatment protocols, and long-term consequences.

**W.WR.11-12.5**

Conduct research projects synthesizing multiple sources to evaluate injury prevention strategies and treatment options.

**SL.UM.11-12.5**

Make strategic use of digital media in presentations explaining concussion data, prevention plans, or patient education materials.

**Connections to NJSLS - Mathematics**

MP.2 Reason abstractly and quantitatively.

HSS-IC.B.6 Evaluate reports based on data.

## Unit #5 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - Brain structure and function quiz
  - Concussions and CTE quiz
  - Case studies on spinal cord injuries
  - Spinal cord injuries quiz
- Warm ups
- Exit tickets
- Project check-ins
- Article questions
- Summary charts
- Modified Assessments/ Projects

**Summative Assessments: (includes alternative assessments were applicable)**

- Concussion Case Study Analysis
- Spinal cord injury infographic or pamphlet for patients/families

***Common Benchmark Assessment**

## Unit #5 Stage 3 Learning Plan

Potential Unit Launches

- Students watch the movie *Concussion*, which tells the story of Dr. Bennett Omalu, the doctor who diagnosed NFL players with CTE
- TEDEd lesson on concussions

Potential Supporting Lessons

- SWBAT describe the structure and function of the major components of the brain and its protective coverings

- SWBAT how a concussion occurs and how it impacts the brain
- SWBAT recognize the short and long-term impacts of a concussion
- SWBAT evaluate an athlete for a concussion using the SCAT5 protocol
- SWBAT describe the proper treatment protocol for athletes with concussions
- SWBAT analyze published data on CTE and draw conclusions about the impact of CTE on the brain
- SWBAT develop a plan to reduce the number of concussions that occur in youth sports
- SWBAT describe the structure and function of the spinal cord and its protective coverings
- SWBAT evaluate whether an SCI is complete or incomplete and its impact on sensation and motor function based on location and degree of trauma to the spinal cord
- SWBAT construct a pamphlet or infographic that explains the cause, potential impacts, rehabilitation strategies, and potential treatments for SCIs

Potential Summative Assessments

- Spinal cord injury case study on Eric LeGrand

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**

- *Essentials of Athletic Injury Management*, 8th edition, © 2010, William E. Prentice, PhD, ATC, PT, FNATA
- The National Athletic Trainer's Association (NATA) https://www.nata.org/
- The Secondary School Sports Medicine Course Outline (NATA)
- NSCA Strength and Conditioning Manual

## Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

**Specific Strategies and Practices that Support Students with Disabilities:**

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback

**Unit 5: Concussions and Spinal Cord Injuries (SCIs)**

- Review of case study data and discussion of meaning in small groups

**Specific Strategies and Practices that Support English Language Learners**

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.
Unit 5: Think-pair-share - Cooperative learning groups

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**

Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

# Unit # 6

## Stage 1 Desired Results

**Unit #6: Performance Enhancing Drugs (PEDs) and Drug Testing**

**Unit Summary:** This unit provides students with an introduction to the biological mechanisms of, the short and long-term health risks, as well as the penalties associated with the major types of PEDs used for doping in sports. It will also introduce students to the anti-doping agencies, such as the World Anti-Doping Agency (WADA), that are responsible for determining which substances are illegal, creating the testing protocols for banned substances, and the consequences for athletes who are caught using a PED.

## Unit #6 Learning Standards / Targets

**NJSLS Science (PE):**

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within a multicellular organism

**Science and Engineering Practices:**

Asking Questions and Defining Problems
Engaging in Argument from Evidence
Obtaining, Evaluating and Communicating Information

**Cross-Cutting Concepts:**

Cause and Effect: Mechanism and Explanation
Structure and Function

| **Unit Enduring Understandings:** | **Unit Essential Questions:** |
|---|---|
| • A performance enhancing drug (PED) is a substance that is taken by an athlete to boost athletic performance; most PEDs pose serious health risks to the athlete, and are banned by anti-doping agencies such as WADA<br>• The major goals of drug testing protocols are to protect the health of athletes and to help ensure that competition is fair and equitable | • What is a performance enhancing drug?<br>• What are the risks and consequences associated with taking a performance enhancing drug?<br>• How do anti-doping agencies determine which substances should be on the banned list?<br>• How do anti-doping agencies test athletes for PEDs?<br>• How can we improve the testing protocols of anti-doping agencies? |
| **Vocabulary:** performance enhancing drug (PED), ergogenic aids, anabolic steroids, stimulants, hormones, growth factors, beta-2 agonists, narcotics, cannabinoids,glucocorticoids, beta-blockers, blood doping, gene doping, testing protocol, anti-doping agency, WADA | |
| **Interdisciplinary Connections** | |
| **Career Readiness, Life Literacies, & Key Skills** *(CLKS)*:<br>9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.<br>9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving.<br>9.4.12.IML.7: Develop an argument to support a claim regarding a current workplace or societal/ethical issue such as climate change.<br>9.4.12.IML.8: Evaluate media sources for point of view, bias, and motivations. | |
| **Computer Science & Design Thinking (***CS & DT***):**<br>8.2.12.EC.1: Analyze controversial technological issues and determine the degree to which individuals, businesses, and governments have an ethical role in decisions that are made. | |
| **NJSLS Companion Standards - ELA**<br>**RI.CR.11-12.1**<br>Accurately cite evidence from scientific and technical texts to support analysis of PED mechanisms, risks, and regulations. | |

**RI.CR.11-12.8**
Evaluate arguments and evidence presented in texts addressing ethical, biological, and societal implications of PED use.

**W.AW.11-12.1**
Write arguments to support claims regarding the use or prohibition of performance enhancing drugs, using valid reasoning and relevant, sufficient evidence.

**W.WR.11-12.5**
Conduct research projects to investigate PEDs, testing protocols, and policy decisions.

**W.SE.11-12.6**
Gather relevant information from authoritative sources, assess credibility, and integrate information while avoiding plagiarism.

**Connections to NJSLS - Mathematics**
MP.2 Reason abstractly and quantitatively.
HSS-IC.B.6 Evaluate reports based on data.

## Unit #6 Stage 2 Assessment Evidence

**Formative Assessments:**

- Quizzes
  - PED summary chart
  - Quiz on PEDs
- Warm ups
- Exit tickets
- Project check-ins
- Article questions
- Summary charts
- Modified Assessment/ Project

**Summative Assessments: (includes alternative assessments were applicable)**

- Presentation on the biological mechanism, short and long-term health risks and testing protocols for a PED

***Common Benchmark Assessment**

## Unit #6 Stage 3 Learning Plan

**Potential Unit Launches:**

- Students watch the documentary *Icarus*, which follows the story of an amateur cyclist who uncovers the doping scandal involving Russian scientists and athletes during the Sochi Olympics.
- Students watch a short clip on doping in sport OR CNN explains PEDs

**Potential Supporting Lessons:**

- SWBAT explain what the most common types of performance enhancing drugs are and how they work
- SWBAT evaluate the health risks associated with taking performance enhancing drugs
- SWBAT explain how WADA decides whether or not a substance should be added to "The List" and how they test an athlete for that specific substance
- SWBAT evaluate the benefits and risks of taking a performance enhancing drug

**Potential Summative Assessments:**

- Argumentative essay on whether or not athletes should be allowed to take PEDs

## Core Instructional & Supplemental Materials

**Texts, Readings, Online Platforms & Other Resources:**

- *Essentials of Athletic Injury Management*, 8th edition, © 2010, William E. Prentice, PhD, ATC, PT, FNATA
- The National Athletic Trainer's Association (NATA) https://www.nata.org/
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## Accommodations and Modifications:
## Students with Disabilities, English Language Learners,
## Students at Risk of Failure, Students with 504s, Gifted & Talented Students

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**Unit 6: Performance Enhancing Drugs and Drug Testing**

- Project rubric and checklist for performance enhancing drug project, guiding questions for PED notes

**Specific Strategies and Practices that Support English Language Learners**
English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.
Unit 6: Extended Time

**Students at Risk of Failure**

- Home/School Connection - Alternative Assessments - Learning Contracts - Homogenous Grouping - Supplemental Instruction - Think-Pair-Share by Readiness - Homework Options - Differentiated Online Practice - Leveled Rubrics - Tiered Level of Supports - Tiered Activities - Small Group Instruction - Work Alone Choice - Group Work Choice (all units)

**Students with 504 Plans**

Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way. Students' accommodations are outlined in their individual 504 plan. (all units)

**Specific Strategies and Practices that Support Gifted & Talented Students**
It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

-Homogenous Grouping - Small Group In-Depth Instruction - Differentiated Online Practice - Alternative Assessments - Pre-Assess to provide Differentiated Instruction to Accelerate Learning (all units)

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## New Jersey Student Learning Standards - Science

**Science**
Scientific and technological advances have proliferated and now permeate most aspects of life in the 21st century. It is increasingly important that all members of our society develop an understanding of scientific and engineering concepts and processes. Learning how to construct scientific explanations and how to design evidence-based solutions provides students with tools to think critically about personal and societal issues and needs. Students can then contribute meaningfully to decision-making processes, such as discussions about climate change, new approaches to health care, and innovative solutions to local and global problems.

**Three Dimensions of NJSLS Science**
**Performance Expectations (PE) are student learning standards devised with the three dimensions or components described below. For detailed information regarding the research and design behind the standards click here.**

**Disciplinary Core Ideas (DCI)**

The fundamental ideas that are necessary for understanding a given science discipline. The core ideas all have broad importance within or across science or engineering disciplines, provide a key tool for understanding or investigating complex ideas and solving problems, relate to societal or personal concerns, and can be taught over multiple grade levels at progressive levels of depth and complexity.

Disciplinary Core Ideas in Physical Science (PS)
Disciplinary Core Ideas in Life Science (LS)
Disciplinary Core Ideas in Earth and Space Science (ESS)
Disciplinary Core Ideas in Engineering, Technology, and the Application of Science (ETS)

**Science and Engineering Practices (SEP)**

The practices are what students DO to make sense of phenomena. They are both a set of skills and a set of knowledge to be internalized. The SEPs reflect the major practices that scientists and engineers use to investigate the world and design and build systems.

**Crosscutting Concepts (CCC)**

These are concepts that hold true across the natural and engineered world. Students can use them to make connections across seemingly disparate disciplines or situations, connect new learning to prior experiences, and more deeply engage with material across the other dimensions. The NGSS requires that students explicitly use their understanding of the CCCs to make sense of phenomena or solve problems.

| **Science and Engineering Practices (SEP)** | **Crosscutting Concepts (CCC)** |
|---|---|
| • Asking Questions and Defining Problems<br>• Planning and Carrying Out Investigations<br>• Analyzing and Interpreting Data<br>• Developing and Using Models<br>• Constructing Explanations and Designing Solutions<br>• Engaging in Argument from Evidence<br>• Using Mathematics and Computational | • Patterns<br>• Cause and Effect: Mechanism and Explanation<br>• Scale, Proportion, and Quantity<br>• Systems and System Models<br>• Energy and Matter<br>• Structure and Function<br>• Stability and Change |

| | |
|---|---|
| Thinking<br>• Obtaining, Evaluating, and Communicating Information | |