# The Road to Rockingham: Instructor Guide

## Title:

The Road to Rockingham

## Author:

Robert B Tallitsch
Department of Biology
Augustana College
Rock Island, IL 61201-2296
RobertTallitsch@augustana.edu

Marko Krpan



## Discipline:

Biological Sciences

## Target Audience

Intermediate, majors and nonmajors

## Keywords

Anatomy, kinesiology

## Length of Time/Staging

Two in-class sessions of approximately fifteen to twenty minutes each, as well as two to three out-of-class sessions of two to three hours each

## Abstract

Elliott is a regional stock car racer that is hoping to make it to the Busch Racing Series and, ultimately, the NASCAR circuit. He is entered in a regional stock car race when he is involved in a high-speed accident. This two-part problem helps students understand the anatomy of the neck by investigating possible injuries that could result from a high-speed automobile accident.

## Date Submitted

12/2/2003

## Date Published

5/2/2004

## Format of Delivery

The problem is given in two parts. Each part is discussed in class for approximately fifteen to twenty minutes each. Students must then work outside of class for an additional two to three hours for each part.


Image courtesy of www.nascar.com

## Student Learning Objectives

This problem was written with the following summative objectives in mind:

1. Develop a better anatomical understanding of the anatomical structure of the vertebral column, with a special emphasis on the anatomy of the cervical region, as well as the various joints found between adjacent vertebrae and the associated muscles and supporting ligaments.
2. Develop a better understanding of the range of injuries that might be obtained in a hyperextension-hyperflexion injury.
3. Develop a better understanding of the severity of a head and neck injury, and understand why such an injury must be treated before any other less life-threatening injury.

This problem was written with the following formative objectives in mind:

1. Increase overall problem solving skills, including the ability to define problems, gather and evaluate information, and develop solutions.
2. Develop effective knowledge acquisition skills.
3. Develop better team skills.
4. Increase communication skills.
5. Increase self-assessment skills.

6. Increase ability to assess the work of others.
7. Increase ability to identify, find and use appropriate resources.

## Student Resources

Students should be able to solve the attached problem by utilizing their anatomy text as well as associated library resources suggested below:

Various Medical Dictionaries found at REF R 121

*Gray's Anatomy* REF QM 23.2 .G73 1995

*Professional Guide to Signs and Symptoms* REF RC 69 .P77 2001

*Atlas of Human Anatomy* REF QM 25 .N46 1997

*The Merck Manual* REF RC 55 .M4 1999

*Magill's Medical Guide* REF RC 41 .M34 2002

Moore, K.L. & Dalley, A.F. *Clinically Oriented Anatomy (4th ed.)* (1999) Philadelphia: Lippincott, Williams & Wilkins.

## Instructor Resources

It is advised that students not be given the web address below, as it will provide them with a solution to the problem, and will (in the author's opinion) defeat the purpose of the problem.

Hunter, O.K. Jr. Cervical Sprain and Strain. Retrieved 2 December, 2003 from eMedicine Website: www.emedicine.com/pmr/topic28.htm

## Assessment Strategies

This problem has been utilized in Human Anatomy classes with an enrollment ranging from forty to eighty students. Assessment has been both summative and formative.

### *Summative Assessment:*

Summative assessment has been broken down into two formats. One format involves evaluation of both the group and individuals within the group. The following procedure is followed in evaluating individual and group progress on the PBL:

On the day the PBL is assigned the class will break up into PBL groups and do some preliminary work on the problem. By the next class session each PBL group member must turn in an individual hard-copy preliminary report. The preliminary report must contain the following:

- Possible hypothesis of what is wrong with the patient.
- What you will need to find out in order to prove or disprove your preliminary hypothesis, and where you will look to find this information.
- Any terminology that is not understood must be listed and defined, and the source of the definition cited.
- It is expected that each member of the group will review all of the group's preliminary hypotheses prior to coming to class the day the preliminary reports are due.

On the day the preliminary report is due the second part of the problem will be handed out. The class will again break into PBL groups and do further preliminary work on the problem. In this session the group will now:

- Determine how the additional information has changed any or all of the preliminary hypotheses, and why.
- Determine the course of action the group will take in order to solve the problem.
- Divide up the work that needs to be completed in order to solve the problem. The group leader will then post, in the group's Public Folder, a listing of what task is to be accomplished by what group member.

At the next class session (after distribution of part 2 of the PBL) each group member will turn in an individual hard-copy secondary preliminary report. (A copy will also be posted in the Public Folder). This secondary report must contain the following:

- Statement as to how your preliminary hypothesis of what is wrong with the patient has changed, and why.
- What you will need to find out in order to prove or disprove your newly formed hypothesis, and where you will look to find this information.
- Any new terminology that is not understood must be listed and defined, and the source of the definition cited.

As published in the course schedule, each group is required to submit a final report at the state of the appropriate class period. (It would be advisable for the group to keep at least one backup copy on computer disc.) The group report is to contain at least the following:

- Hypothesis of the solution to the problem.
- Sound anatomical reasoning to substantiate your hypothesis.
- Citations for any and all sources utilized, including your textbook.
- PBL reports will be graded on the anatomical accuracy of the final solution to the problem, as well as the anatomical logic utilized to arrive at the final solution.

A second form of summative evaluation is inclusion of material covered in the PBL on a "standard" lecture examination. The anatomical objectives may be assessed in the form of objective or essay questions.

***Formative Assessment:***

Formative assessment is accomplished two times during the course: at midterm and at the end of the course. Students are asked to fill out a form that assesses team and individual performance twice during the term. Individual growth throughout the term is assessed only at the end of the term.

## Solution Notes

Solution removed.