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Excluding Gluten in a Healthy Collegiate Runner

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Objective: Gluten is a plant protein that has been a topic of study over the last ten years as dietary substance to which approximately 1% of Americans show intolerance to. This intolerance shows itself when cilia lining the intestines are damaged due to lack of gluten protein metabolization.i,vii Those diagnosed with Celiac Disease (CD) have been biopsy tested and proven to have not only the gastrointestinal (GI) symptoms but also the cilia damage.iii All others with GI symptoms but no damage in the intestines are considered gluten-sensitive. The complete exclusion of gluten has been the only effective treatment to date to curb the effects of CD.i,ii,iii Gluten-free dieting has become a relatively new entity implemented in the performance enhancing arena within the past ten years after CD began being used as a frequent diagnosis in Western medicine. Endurance athletes, as well as others throughout athletics, have taken on this gluten-free lifestyle in pursuit of a regulation in GI tract to increase health and performance. Current research is controversial on the topic and many opinions have been given both for and against the use of a gluten-free diet as a performance enhancer. This study aims to address the question, "What are the perceived and actual effects of a gluten-free diet on NCAA collegiate cross country runners?" Results of the research will help bridge the gap between what is thought to be good eating habits and the real effects it has on the goal of performance enhancement in athletics. The purpose of this study is to: a.) Briefly assess current knowledge about gluten-free diets as well as using the diet as an athletic performance-enhancer in a former collegiate cross country athlete, b.) Investigate current habits of the athlete's diet and effects on health and performance c.) Compare the athlete's diet and performance after four weeks of participating in the study.

Subject: A healthy collegiate male who previously participated in NCAA Division II cross country was selected for this study based on referral from his former athletic trainer. At the time of the study the subject was a 23 year old student in Ohio, regularly running twice per week. Prior to participating, the subject read and signed the informed consent (Appendix A) which had been approved by the Institutions' Review Board.

Intervention: Collection of data consisted of an online pre-test survey (Appendix B) prior to the intervention, a daily diet log during the intervention, and an online survey after the intervention to identify changes from the baseline pre-test (Appendix C). The surveys consisted of demographic questions based on the subject's current eating habits, gastrointestinal symptoms, and average running performance times. The survey prior to the intervention also assessed the athlete's knowledge of a gluten-free diet's components and uses before the informational materials were shared. The intervention was a four week total gluten restriction with all other variables constant. After the intervention, all demographics were reassessed and questions regarding preference and the realistic implications for the athlete to personally use the diet for future performance enhancement. The subject was provided information from a book written by a registered dietitian on how to eat with a gluten restriction and menus for restaurants with gluten-free options. Communication between researcher and subject remained open for any questions and support he required.

Results: The subject's adherence to the program was self-reported from a daily diet log to be 93%. The remaining 7% of non-adherence consisted of two consecutive days that were not normal to his schedule and relatively out of his control. Before the intervention, the participant reported to never eating a balanced diet based on the health guidelines of www.choosemyplate.gov; after the intervention the participant reported to eat balanced meals "most of the time". In addition, before the diet restrictions, the subject had symptoms of frequent flatulence and occasional diarrhea to be the most significant complaints. The post-survey, conducted immediately following the finish of the diet revealed that the athlete had little to no complaints of gastrointestinal symptoms, with only rare abdominal pain and

constipation to be the only possible symptoms. Mental focus and energy level increased by one on a ten-point Likert scale. Interestingly, in the pre-survey, the athlete anticipated on current symptoms to continue for they were suspected to be of another origin. Reported on the survey after intervention, the subject mentioned a symptom decrease with less lethargy after meals and prolonged mental focus. As anticipated, the athlete felt an increase in energy and pace, (regardless of no actual increase in pace).

Key Words: *Gluten, healthy athlete, diet restrictions, gastrointestinal function, running performance*