

OFFICE OF THE DIRECTOR OF INTERCOLLEGIATE ATHLETICS
UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK 10996

September 8, 2008

Mr. Dan Kelly
HealthSport Inc.
495 Commerce Drive
Suite 1
Amherst, NY 14228

Dear Dan:

I recently spoke to our Head Athletic Trainer concerning your product, Enlyten. He distributed the strips to many of our athletes this past summer while they were both working out with their teams and while performing extensive military training.

Our athletes found the strips prevented cramping particularly when doing long road marches in full combat gear on hot and humid days. They were very impressed with the portability of these strips and the ability to easily carry them anywhere when training. They also reported not feeling as fatigued when utilizing the strips. Our football squad of 200+ players used the strips extensively during the pre-season and effectively eliminated the need for IV fluids during training camp. This is the first time we have avoided the use of intravenous fluids during our training camp.

Thanks again for providing your product to our team. We look forward to utilizing your product in the future.

Sincerely,



Kevin B. Anderson
Director of Intercollegiate Athletics



Michael W. Krzyzewski Human Performance Laboratory
"Studying the world's most complex machine."

Buccal Delivery of Electrolytes During Athlete Performance

by Anthony V. Seaber

Muscle cramping is a frequently encountered problem among athletes and is believed by many to be caused by depletion of electrolytes during intense exercise. The current methods of replenishing electrolytes often involve ingesting large amounts of fluid, incorporating carbohydrates as well as electrolytes and tablets or gels via the gastrointestinal tract. This may not be the most rapid or efficient method to restore electrolyte balance.

In the Michael W. Krzyzewski Human Performance Laboratory (The K Lab), we are presently assessing new materials, including the Enlyten™ Electrolyte SportStrips™ from HealthSport Inc., using the buccal mucosa delivery site for electrolyte delivery. **Athletes using a thin bi-layer film impregnated with electrolytes report decreased post exercise cramping.**

Buccal administration of electrolytes via the mucosal membranes lining the cheeks has many advantages over current methods of electrolyte delivery. Scientific evidence is abundant that among the various transmucosal sites available, mucosa of the buccal cavity is found to be convenient and is an easy and accessible site for delivery of electrolytes and other therapeutic agents. The oral cavity is accessible during even the most active sport if innovative ways can be found to carry and deliver the material.

The cellular lining of the cheek has abundant vascularization, rapid recovery from stress and is supported by smooth muscle which is relatively immobile. The environment is moist but is not flooded by saliva under usual circumstances. Because the buccal mucosa is so highly vascularized, compounds absorbed via this route enter the systemic circulation directly, bypassing the gastrointestinal tract and metabolism by the liver. Using the buccal mucosa approach, it is thought that the **substance enters the blood stream within 5 minutes** as opposed to 30 minutes via the gastrointestinal route. Also, the concentration of a given substance is absorbed at a significantly higher level when compared to the gastrointestinal route.

There are other sites of delivery within the oral cavity. The sublingual site (under the tongue) perhaps would afford more rapid absorption because the tissue is thin and permeable. However, the area is prone to rapid dilution by saliva and more likely to be swallowed. The same problem exists if material is placed on the tongue. **The efficiency and ease of buccal delivery could make this the choice for athletes in the future.**

To your performance,

Anthony V. Seaber
Senior Research Associate
Director Orthopedic Research Laboratories
Duke University Medical Center

a recommendation from
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The Relationship of Electrolyte Supplements to Athletic Performance

by David J. Berkoff, MD

Enlyten™ Electrolyte SportStrips™ is an innovative new product that replaces the electrolytes our bodies lose while exercising through buccal (cheek to gum) absorption. This mode of absorption is very different than all electrolyte delivery predecessors. Gastric absorption is bypassed and the **electrolytes needed are directly absorbed into our bodies**. Additionally this will help to avoid the over-hydration that often accompanies the excessive consumption of sports drinks.

Our bodies lose approximately 2-3 liters a day of fluid when sedentary and this can increase to 10-15 liters in intensively training athletes, especially in warmer climates. With increasing fluid loss comes increasing electrolyte loss, and these too need to be replenished. In addition to water, the primary components of sweat are sodium, potassium and chloride, with smaller concentrations of magnesium and calcium. **If an athlete does not adequately replace these losses during and after exercise, performance can be negatively affected.** There exists an abundance of research regarding which electrolytes are responsible for cramping and impaired performance. However to date, there are few if any large randomized trials conclusively linking one particular electrolyte abnormality with cramps, weakness or impaired performance. In a study of NCAA football players by Stofan and others, crampers were compared to non-crampers, and electrolyte concentrations were one of their study outcomes. **This study showed that NCAA football players who are prone to total body cramping lost more sodium in their sweat than non-cramping controls.**

Fluids consumed during exercise typically contain both carbohydrates and electrolytes. The amount of each varies by product. Typically these drinks have between 2 and 8 percent carbohydrate with a large range of electrolyte concentrations within them. **A major limitation associated with re-hydration and electrolyte repletion is absorption.** During exercise our bodies divert blood from our stomach and intestines to our exercising muscles. This leads to an increased gastric emptying time and altered intestinal absorption. Additionally, the addition of carbohydrate to these drinks can alter an athlete's digestive ability. Slowed gastric emptying combined with altered absorption will limit the availability of the fluid and electrolytes we orally consume to be used by our bodies. Many athletes performing at high intensities will have a difficult time ingesting an adequate amount of fluid to maintain this homeostasis due to these changes. How exactly performance is adversely affected needs further research, but it is clear that **current electrolyte delivery methods have major limitations.**

Enlyten SportStrips are absorbed very differently. They are designed to bypass the inherent inadequacies of gastric and intestinal absorption during exercise. **SportStrips are absorbed directly into the blood stream** through the buccal mucosa and thus is affected by neither gastric emptying nor colonic irritability.

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a recommendation from
david j. berkoff, MD
duke university medical center, K-lab



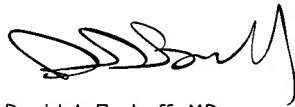
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There is a growing body of literature that supports the premise that hydration in any form (water or sports drink) can lead to a reduction in serum sodium and possibly adversely affect performance. The 2005 New England Journal of Medicine article regarding hyponatremia and marathon runners found that this condition (hyponatremia) was indeed not as rare as prior research had led us to believe.

Enlyten SportStrips are the quickest and most efficient electrolyte delivery system available. Maintaining proper electrolyte balance will assist in reducing exercise related cramping, hyponatremia and help to **maximize performance** in all types of athletes.

Research beginning at the Michael W. Krzyzewski Human Performance Laboratory at Duke University will begin to look further into this new product and its benefits to athletes of all types and abilities.

To your performance,



David J. Berkoff, MD
Assistant Professor of Surgery
Division of Sports Medicine and Emergency Medicine
Coordinator of Physiologic Testing
Michael Krzyzewski Human Performance Laboratory
Duke University
Durham, NC 27710

ADDITIONAL REFERENCES

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