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IN THE SPOTLIGHT: RICK GRIFFIN

PBATS International Impact

By: Magie Lacambra, MEd, ATC

In 1990, Rick Griffin, Seattle Mariners' Head Athletic Trainer, accompanied Charlie Strasser, Head Athletic Trainer for the Los Angeles Dodgers, to Japan to put on a sports medicine clinic for Major Trainers, Inc. Little did Griffin know that would lead to a successful student exchange program that still exists today.

Griffin was appointed Chairman of the PBATS International Committee in 1994. That year marked the beginning of the PBATS International Program, whose focus is to provide educational opportunities for international students to learn more about baseball sports medicine. This program gave students from Japan an opportunity to spend two weeks with Major League Baseball athletic trainers during spring training in Arizona, learning how to evaluate, treat, and rehab baseball-related injuries. A focus on upper extremities was of particular interest to the Japanese students due to the popularity of baseball in their home country. Exposure to MLB players while observing and learning from PBATS members led to fierce competition to fill available spots each year. Students complete an application, write a cover letter explaining why they are interested in the PBATS program, and go thru an interview with Griffin. Acceptance into the program is considered a big honor by the students and their university professors.

Success of the PBATS International Program grew each year, leading to more students applying, and more exposure for the program. An article in the NATA News in 2012 caught the attention of Mary Dowling of Carlow Institute in Ireland. Dowling contacted Griffin wanting to send students to the program. In 2014, two universities from the United Kingdom, Salford University and St. Mary's University, outside of London, also expressed

interest in the PBATS program. To accommodate the additional students from Ireland and the UK, Griffin had to expand the program to include MLB teams in Florida. Students from Japan spend two weeks in the US learning from PBATS members, while students from Ireland and the UK stay for one month due to their program requirements.

PBATS also partnered with Murdoch University in Australia for six years, preparing their students to work with the Australian baseball league in the summer. The PBATS International Program continues to gain interest from other countries and is currently working on partnering with a university in Canada.

As a result of the growth and success of the program, PBATS gained a lot of global exposure and was invited to put on clinics in Italy, Germany, Korea, and Latin America. In addition, PBATS helped the NATA gain international exposure by putting on a three-day sports medicine clinic in 2018 at St. Mary's University, courtesy of PBATS and NATA. Griffin served as Education Program Chair and secured Jamie Reed (Texas Rangers), Ron Porterfield (Los Angeles Dodgers), and Nick Kenney (KC Royals) to present, with NATA President Tory Lindley providing the Key Note address to 175 attendees. The president of JATO (Japan Athletic Trainers Organization) heard of this clinic and asked for the same. In 2019 Griffin put on a similar clinic in Tokyo for 350 attendees.

Due to its global exposure, PBATS became a go-to organization to disseminate education on sports medicine. In 2020, PBATS was awarded the NATA International Partner Award. This award is given to a group that has promoted sports medicine and athletic training internationally. Griffin is very proud of this award,

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as he has put a lot of time, effort, and heart into making this program successful. He admits that he could not do this without the support of willing PBATS members to take on students and speak at the conferences. Griffin is especially grateful to Jamie Reed, former PBATS President, currently with the Texas Rangers, for to his tremendous support of this program, which has hosted an exchange student every year and presented at each conference.

Shortly after returning from the clinic in Tokyo, COVID shut everything down. This caused Griffin to rethink how the program would move forward to ensure its success and competitive nature. A shift was made to have the exchange student's observation and learning period with MLB teams take place between June and September, rather than during spring training. This would allow students to learn how an MLB training room is run in-season, as well as expose them to additional staff, like strength and conditioning coaches and their involvement in return to play following an injury. Students work with Griffin to select dates that work best for them to come to the US, and he assigns them to an MLB team. Students are responsible for airfare and lodging, while the team they are assigned to provides them with two meals per day, transportation from/to the airport, and outfits them with full team apparel. Despite the success of the program and the positive experience reported by students, they usually only participate in the program once as most of them gain employment right after graduating.

Involvement from PBATS members has also grown over the years. They realize that it's fun mentoring students who have a high interest in learning along with a strong work ethic. PBATS members enjoy watching the short videos that each exchange student makes following their time in the US, explaining what they learned and liked about their experience. The videos invigorate the PBATS members as they see what an impact they have made on the students.

A relationship with the Japan Professional Baseball League has evolved into an opportunity for Minor League AT's. Every other year, PBATS sends one of its members to Japan for two weeks to participate in their instructional league while learning treatment methods. In exchange, athletic trainers from Japan come to the US on the off years and spend two weeks with an MLB team in Arizona to learn their treatment methods.

As the PBATS International Program has grown, so has the work to make it happen. Griffin is finally accepting help. Joe Benge, Head AT for the Tampa Bay Rays, and Justin Kemp, Minor League Coordinator for the KC Royals, joined Griffin this year to assist with the program. Griffin can accept this help and be proud of what he has accomplished. Not counting this year's exchange students, the PBATS International Program has hosted 148 students from Japan, 36 students from Ireland, and 30 students from the UK.

Rick, you have succeeded in creating a globally respected and successful program that does exactly what PBATS aims to do, educate and give back. Congratulations!

NEWS AND NOTES



2022 PBATS Hall of Fame Inductee

Richie Bancells
Baltimore Orioles



2022 PBATS President's Distinguished Service Award

Roger Caplinger
Milwaukee Brewers



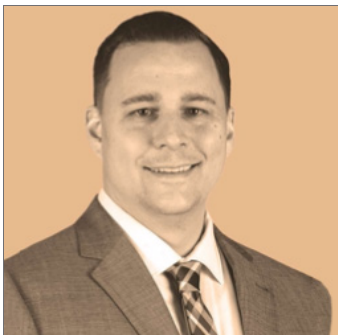
2022 PBATS President's Distinguished Service Award

Tom Probst
Colorado Rockies



2022 PBATS Minor League Athletic Trainer of the Year

Carlos Olivas
Round Rock Express (Texas Rangers)



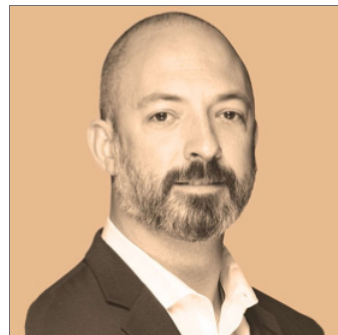
2022 PBATS Major League Staff of the Year

Paul Bucheit
Philadelphia Phillies



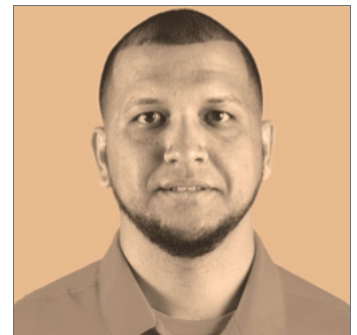
2022 PBATS Major League Staff of the Year

Aaron Hobeck
Philadelphia Phillies



2022 PBATS Major League Staff of the Year

Joe Rauch
Philadelphia Phillies



2022 PBATS Major League Staff of the Year

Christian Bermudez
Philadelphia Phillies

2022 PBATS MINOR LEAGUE ATHLETIC TRAINERS OF THE YEAR INDIVIDUAL LEAGUE AWARDS

Coordinator	Corey Tremble	Detroit Tigers
International League	Dan Martin	St. Louis Cardinals (Memphis Redbirds)
Pacific Coast League	Carlos Olivas	Texas Rangers (Round Rock Express)
Eastern League	Chris Vick	Detroit Tigers (Erie SeaWolves)
Southern League	Matthew Deal	Milwaukee Brewers (Biloxi Shuckers)
Texas League	Jesse Guffrey	Los Angeles Dodgers (Tulsa Drillers)
Florida State League	Josh Hobson	Cincinnati Reds (Daytona Tortugas)
California League	Maritza Castro	San Diego Padres (Lake Elsinore Storm)
Carolina League	Jeremy Kneebusch	Chicago White Sox (Kannapolis Cannon Ballers)
Midwest League	Brad Groleau	Kansas City Royals (Quad Cities River Bandits)
South Atlantic League	Jonathan Becker	New York Yankees (Hudson Valley Renegades)
Northwest League	Dylan Culwell	Los Angeles Angels (Tri-Cities Dust Devils)
Arizona Complex League	Kazuma Fukuzumi	Kansas City Royals (ACL Royals)
Florida Complex League	Jennifer Bardales	Houston Astros (FCL Astros)
Dominican Summer League	Wilson O. Boada	Pittsburgh Pirates (DSL Pirates)

2023 PBATS MINOR LEAGUE ATHLETIC TRAINER 25 YEAR SERVICE AWARD

Mark Littlefield	New York Yankees
Darron London	New York Yankees
Greg Spratt	New York Yankees

2023 ALL STAR GAME ATHLETIC TRAINERS

NATIONAL LEAGUE	Anthony Reyes	San Francisco Giants
	Tomas Vera	Cincinnati Reds
AMERICAN LEAGUE	Kyle Torgerson	Seattle Mariners
	Mike Frostad	Los Angeles Angels

2023 FUTURES GAME ATHLETIC TRAINERS

Corey Tremble	Detroit Tigers
Michael Feliciano	Seattle Mariners

Rotator Cuff Strength, Glenohumeral Joint Stability and an Active Warm-up for Throwing

Dale Gilbert, Washington Nationals, ATC, PTA; Jon Kotredes, Washington Nationals, ATC

In order to perform the throwing motion in a safe and efficient manner, we must be pain-free, have good ROM, strong muscles and a stable glenohumeral joint. In this article, we will focus on an active warm-up for the shoulder along with rotator cuff strength and joint stability.

The stability of the glenohumeral joint depends on soft tissue integrity, including the rotator cuff muscles, the cartilaginous glenoid labrum and the joint capsule. The joint capsule contains the glenohumeral ligaments.¹ These ligaments, along with the rotator cuff muscles and the glenoid labrum, can be further divided into static and dynamic stabilizers of the glenohumeral joint.³

The dynamic stabilizers include the rotator cuff muscles, which consist of the supraspinatus, infraspinatus, teres minor and subscapularis. They also include the scapular muscles, which include the serratus anterior, pectoralis, latissimus dorsi and rhomboids. These larger muscles that surround the shoulder are responsible for controlling scapular stability and the glenoid position and for producing the forces necessary for glenohumeral movements.²

The glenoid labrum and the joint capsule serve as the static stabilizers by deepening the glenoid fossa and maintaining negative intra-articular pressure of the joint.¹ The superior, middle and inferior glenohumeral ligaments attach to the labrum, and their function is very important for glenohumeral static stability.¹

The exercises used for strengthening and stabilization can be and are often used for an active warm-up prior to throwing. Many think that throwing light is an active warm-up. I assure you it is not. That being said, there are many ways to prepare and ready the shoulder and body to throw. The important thing to know about throwing is that we should warm up to throw, not throw to warm up.

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External Rotation Attach the TheraBand at waist level to a doorknob or post. While standing sideways to the door and facing straight ahead, grasp one end of the band and pull all the way through until it is taut. The elbow is placed next to the side with the hand as close to your chest as possible. Taking the cord in the hand, 'set' the shoulder blade and move the hand away from the body as far as it feels comfortable. Return to the start position. Perform 2 sets of 20 repetitions.



Internal Rotation Attach the TheraBand at waist level to a doorknob or post. While standing sideways to the door and facing straight ahead, grasp one end of the band and pull all the way through until it is taut. The elbow is placed next to the side and is flexed to 90 degrees. Taking the band in the hand, 'set' the shoulder blade and move the hand toward the belly as far as it feels comfortable, or to where the endpoint of pain limits you. Return to the start position. Perform 2 sets of 20 repetitions.



Lateral Raises Stand with the arm at your side with the elbow straight and the hands rotated so that the thumbs face forward. Raise the arm straight out to the side, palm down, until the hands reach shoulder level. Do not raise the hands higher than the shoulder. Pause and slowly lower the arm. Perform 2 sets of 12 repetitions.



Standing forward flexion ('full-can') exercise Stand facing a mirror with the hands rotated so that the thumbs face forward. While keeping the shoulder blade 'set' and keeping the elbows straight, raise the arms forward and upward to shoulder level with a slight outward angle (30°). Pause for one second and slowly lower and repeat. Perform 2 sets of 12 repetitions.



Sidelying external rotation Lying on your side, bend your elbow to a 90-degree angle and keep the arm firmly against your side with your hand resting on your abdomen. By rotation at the shoulder, raise your hand upward, toward the ceiling through a comfortable range of motion. Hold this position for 1 to 2 seconds, and then slowly lower the hand. Perform 2 sets of 10 repetitions.



Prone rowing exercise The starting position for this exercise is to lie face down on your bed with the arm hanging freely off of the side. While keeping the shoulder blade 'set', raise the arm up toward the ceiling while bending at the elbow. The elbow should be drawn along the side of the body until the hands touch the lower ribs. Always return slowly to the start position. Perform 2 sets of 15 repetitions.



Prone horizontal abduction ('T's') The starting position for this exercise is to lie face down on your bed with the arm hanging freely off of the side. Rotate your hand so that the thumb faces forward. While keeping the shoulder blade 'set' and keeping the elbows straight, slowly raise your arm away from your body to shoulder height, through a pain-free range of motion. Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to parallel to the floor. Perform 2 sets of 10 repetitions.



Prone scaption ('Y's') The starting position for this exercise is to lie face down on your bed with the arm hanging freely off the side. Keep the shoulder blade 'set' and keep the elbows straight. Slowly raise the arm away from your body and slightly forward through a pain-free range of motion (so that your hand now has the thumb facing up, and is aligned with your forehead). Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to 90 degrees, or in other words, horizontal to the floor. Perform 2 sets of 10 repetitions.



Prone external rotation at 90° abduction ('U's') Lie face down on a table or bed with your arm hanging over the side. Raise the arm to shoulder height at a 90° angle to the body. While holding the arm in this position, rotate the hand upward, until the hand is even with the elbow. Hold one second and slowly let the hand rotate to the starting position and repeat. Perform 2 sets of 10 repetitions.

The Emergence of CBD Supplementation in Sport

Jacob Newburn, MS, LAT, ATC, Assistant Athletic Trainer, Texas Rangers Baseball Club

Over the last two decades, products containing cannabidiol, commonly known as CBD, have burst into the sports supplement world in all forms of oils, powders, tablets, creams, and gels each purporting a wide range of health benefits. The Agriculture Improvement Act of 2018 (2018 Farm Bill) authorized the production of hemp and removed hemp and hemp seeds from the Drug Enforcement Administration's (DEA) schedule of Controlled Substances, paving the way for heightened prevalence and visibility of hemp and CBD products.¹ This offseason MLB even announced a partnership with a CBD company, the first major professional sporting league to do so.²

What is CBD?

Cannabidiol, or CBD, is a naturally derived chemical that comes from hemp plants. It differs from Tetrahydrocannabinol, or THC, the psychoactive ingredient in marijuana that produces the "high" effect. Currently, the FDA has not approved any non-prescription forms of CBD for therapeutic use.³ However, this has not inhibited companies from producing foods, drinks, supplements and beauty products containing CBD.

What Does the Research Say?

There is abundant research showing the benefit of CBD for treatment of seizures, and ongoing research for treatment of a variety of conditions including Parkinson's Disease, Schizophrenia, and anxiety. Currently, research supporting the usage of CBD for all other purposes is limited. In research for use in epileptic seizures, adverse effects have been noted, including diarrhea, vomiting, fatigue, liver abnormalities, and drug interactions.⁴ Off-label uses outside of the current research claim many wide-ranging benefits, but none have been corroborated by scientific research. However, such scientific research on CBD is limited due to regulations in the United States and other countries.

What to Know About CBD in Supplements

Much like any other supplement on the market, CBD supplements are not closely regulated by the FDA and as such cannot be confirmed to contain the exact contents on their label. Some companies have used independent laboratory verification to assure dosages in their products align with their labels. Those CBD

products that are independently verified have gone through such testing to assure that they contain the listed amount of CBD, contain less than 0.3% of THC in line with the requirements of the 2018 Farm Bill, and do not contain other substances not listed on the label.⁴ A recent study of 84 CBD products (non-NSF certified) showed 25% contained lower levels of CBD than labeled, and 18 products were found to contain THC.³ This makes such non-verified products risky for athletes to take.

Where Does That Leave Us?

When any supplement emerges onto the market, anecdotal results precede the production of scientific research. As with any other product, it is prudent for healthcare professionals to urge caution to our athletes when beginning the supplementation of such products. CBD research is currently limited but anecdotal results are abundant and many of our players are asking questions regarding the use of CBD supplements to help with performance or recovery. No current independent research supports the use of CBD for such purposes at this time. However, if an athlete does wish to use a CBD product, we must advise that they proceed with caution, confer with their physicians and medical staff, and seek out products that have been independently verified under the NSF certified for sport program.

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Nutrition and Hydration Biomarkers

Jon Kyle Davis, PhD, CSCS and Anthony Wolfe, MS, Gatorade Sports Science Institute
Article written for Professional Baseball Athletic Trainers Society

Introduction

A typical sports performance team is comprised of a variety of professionals, and communication between the medical and sports science teams is important.¹ Fitness, fatigue, recovery, and injury prevention are often the topics of these teams' communication and athlete monitoring schemes. There are many different approaches to athlete monitoring including physical workload, nutrition, sleep, and various recovery technologies. Often the lowest-hanging fruit is dietary intervention.

Nutrition assessment is a critical first step in evaluating need for dietary interventions including micronutrient intake and supplement use.² Blood profiling is a beneficial step in the assessment process to understand any deficiencies that may exist. This approach is becoming more prevalent in elite sport, however there are certain external factors that can impact biomarker outcomes, such as posture, exercise, hydration status, fasting status, and psychological stress. A more in-depth review can be found in Pedlar et al.³

Similarly, there may be statistical implications that need to be considered. Longitudinal data is often seen as the most impactful form of monitoring, however there are multiple ways to interpret collected data such as utilizing critical difference thresholds, general reference ranges, and even individualized methods using a Bayesian approach.³ Factors influencing biomarker outcomes and statistical analysis are outside the scope of this article, therefore this brief piece will discuss a few key biomarkers useful in sports medicine and performance, particularly those related to nutrition and hydration for health and recovery.

Vitamin D

Vitamin D's most recognizable role is that of regulation of calcium homeostasis. Low vitamin D status has often been linked to poor immune function and compromised muscle health and bone composition. Specifically, manifestations such as unexplained muscle weakness and pain, and potential bone implications have been reported.² Vitamin D deficiency has also been associated with decreased immune capacity and increased upper respiratory tract infections (UTRI).⁴

In most clinical trials serum 25[OH]D concentration is measured. However, recent work has highlighted its limitations, particularly in the context of bone health in black individuals.⁵ Therefore, if bone health is the interest, it is likely that an assay for vitamin-D binding protein (or potentially bioavailable/ free 25[OH]D) should be used.⁶

There is little to no evidence for ergogenic effects at levels above 75 nmol/L.⁶ In fact, while case reports of vitamin D toxicity are limited there is evidence that levels >180 nmol/L may be toxic.⁶ Although these direct cut-offs may not be definitive for all outcomes, there does seem to be widespread agreement that 75 nmol/L is the optimal circulation of serum 25[OH]D to prevent UTRI and maintain immunity.⁴

REFERENCE	VALUE (nmol/L)
Deficient	< 50
Insufficient	< 75
Sufficient	< 75

Iron

Appropriate iron levels are crucial and underpin many important functions for athletic performance. Namely, iron supports red blood cell (RBC) production, delivering oxygen to the muscle, helps to produce energy at a mitochondrial level, and aids in immune function.⁷ While the incidence rates for iron deficiency do seem to be higher in females than males,⁷ it can occur in males. Assessing iron status is critical due to the important role of iron. The symptoms of iron deficiency may manifest as lethargy, lightheadedness, fatigue, and negative mood states along with the more severe cases inducing anemia.^{2,7}

Presently there is still debate as to what are the appropriate cut-off values in blood profiling for iron deficiency due to the large number of biomarkers (see table), however it is agreed that there are three stages of iron deficiency.^{2,7,8} Hepcidin has also emerged as a potential new marker of iron metabolism.^{3,9} Although not yet broadly available or measured, hepcidin seems to impair iron absorption and/or metabolism. Therefore its measurement might be critical to get the most out of

iron supplementation planning.^{10,11} To date a plethora of information on iron as a biomarker exists so ensuring the most appropriate measures are collected is critical as some of them may overlap in various stages.

MEASURE	STAGE OF SEVERITY		
	I ↓	II ↓	III ↓
Ferritin (ug/mL)	< 35 ()	< 20 ()	< 12 ()
[Hb]	> 115	> 115	< 115
Transferrin Saturation (%)	> 16	< 16	< 16
Serum Iron		↓	↓
Soluble Transferrin Receptor		↑	↑
[ZnPP]			↓
HGB			↓
HCT			↓
MCV			

Omega 3

Omega 3 polyunsaturated fatty acids (PUFA) are essential fatty acids, meaning they must be consumed either through dietary sources (i.e., fish oils, salmon, tuna) or supplemented. The most bioactive of the Omega 3 PUFA are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) [12]. The assessment of Omega 3 has received increased attention with athlete monitoring at the collegiate and professional level, specifically the Omega 3-Index. The Omega 3 Index is a percentage of EPA and DHA in total erythrocyte fatty acids. Although the Omega 3 Index is based on CVD risk (see table) this has been primarily used as a reflection of athletes' Omega 3 PUFA consumption over the past 2 months.¹³

CARDIOVASCULAR DISEASE RISK	OMEGA 3 INDEX
High Risk	< 4%
Intermediate Risk	4-8%
Low Risk	> 8%

The scientific rationale for monitoring Omega 3 blood levels stems from Omega 3 PUFA's role in promoting muscle remodeling, muscle repair, improving immune status, decreasing muscle soreness, and helping to maintain explosive power.^{14,15} Recent work has shown the majority of athletes to have a low to moderate Omega 3 Index.^{16,17} These studies have also used Omega 3 dietary and supplement questionnaires to examine intake of Omega 3 PUFA, which have shown low

dietary and supplemental intake.^{16,17} If teams do consider measuring Omega 3 Index this should be combined with an Omega 3 PUFA questionnaire examining dietary and supplement intake.¹⁷ Education can then be provided by the team dietitian for players that need to increase their dietary intake of Omega 3 PUFA. Further, Omega 3 Index should then be periodically monitored among players especially if supplementing Omega 3 PUFA as individual blood concentrations can vary to a given dose.¹⁸

Hydration Biomarkers

The reference method for determining day to day hydration status involves first-morning urinary measures (color, specific gravity, osmolality), plasma osmolality, nude body mass, and thirst.¹⁹ However, obtaining such measurements daily can be challenging, time-consuming, and cumbersome for athletes and coaches. Studies have also examined various hydration biomarkers through saliva and tear osmolality.²⁰ Exploring these methods is beyond the scope of this article however the reader is referred to Barley et al.²⁰ for further information.

Recent work on hydration biomarkers has focused on technology providing real-time urine-specific gravity measurements.²¹ A paper published in 2022 showed an automated urinalysis device that attaches to a urinal showed a strong correlation to optical refractometry for measuring urine-specific gravity.²¹ Technology that addresses both convenience for the athlete, as well as accuracy in measurement, will help practitioners understand athlete behavior.

Work out of Arizona State University showed using a three-panel urine color chart provided similar results to those of traditional urine color charts.^{22,23} However, the key application here is the assessment can be done directly from the toilet. This could help make the method more applicable to the athlete. As technology miniaturizes and becomes more accessible to athletes and the general population this could help allow for a more practical understanding of athletes' day-to-day hydration status.

Conclusion

There are a number of biomarkers the sports medicine staff could potentially monitor. The key question for the athletic trainer is to think through what specific biomarkers they want to track for athlete's long-term health and to help promote behavior change with nutrition and hydration. Further, understanding what biomarkers have been validated against gold

standard measurements that can also be easily implemented during annual medical screenings or daily implementation in the field.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of PepsiCo, Inc.

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