

AthleteMonitoring.com

MAXIMIZING INJURY PREVENTION & PERFORMANCE WITH ATHLETE MONITORING TECHNOLOGY

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SPORTS INJURIES = BIG PROBLEM



In the U.S. only, 1.5M high school and college athletes are injured every year.

Every hour, 172 student-athletes suffer a sports injury severe enough to seek medical attention



High school athletes account for an estimated 500,000 doctor visits and 30,000 hospitalizations each year (stopsportsinjuries.org)

Youth sports-related injuries have increased by 500% to 700% in the last 10 years



National High School Sports-Related Injury Surveillance Study
[<http://www.ucdenver.edu/academics/colleges/PublicHealth/research/ResearchProjects/piper/projects/RIO/Documents/2012-13.pdf>]
2009–10 Through 2013–14 Academic Years
<http://www.medscape.com/viewarticle/855867>***<http://www.stopsportsinjuries.org/media/statistics.aspx>
<http://www.ncbi.nlm.nih.gov/pubmed/15502559>

INJURIES ARE NOT BAD LUCK

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● Players rating of fatigue and sleep quality are significant predictors of injuries.

Laux et al . Journal of Sports Sciences, 2015

● Fatigue contributes directly to anterior cruciate ligament (ACL) injuries.

McLean, 2009.

● Football players are 3.19 times more likely to get injured during weeks when they had high academic stress.

Mann et al. J Strength Cond Research, 2015



● Player's average playing time per game is a significant predictor of concussion.

Stevens & Smith, 2008

● Unusual increase in training load during the week prior to injury compared to that of the 4 preceding weeks.

Rogalski, 2013

'Overuse injuries almost always involve training errors'

Dr. Lyle J. Micheli Director, Division of Sports Medicine at Children's Hospital Boston

COSTS ARE ENORMOUS

"Injuries are the fourth-largest cost to US sports franchises, after payroll, facilities and marketing"
sportsbusinessdaily.com, Oct 18, 2013

"In the US, anterior cruciate ligament ruptures costs about \$3.6 billion every year"
USA Today, Aug 6, 2013

"In Canada, cost of game-related injuries amounts to US \$218 million per NHL season"
The Globe and Mail, Jan 20 2014

"In Switzerland, football injuries cost 145 million Swiss francs each year "
abcnews.go.com, Dec 20, 2013

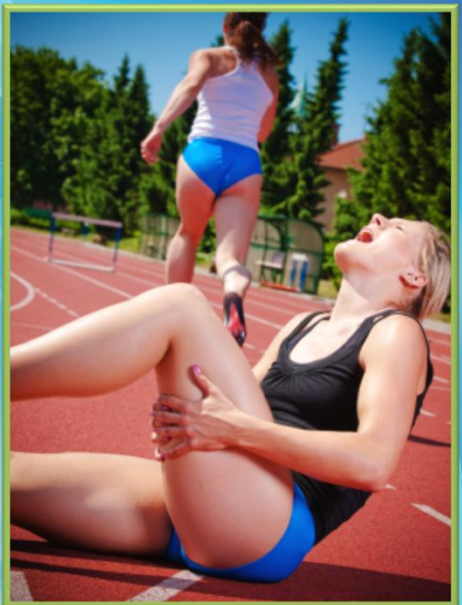
"In Australia, sport injuries cost \$2 billion per year"
news.com.au, 2011



'Injuries that result in decreased match availability, impact negatively team performance'

The 11-year follow-up of the UEFA Champions League injury study, 2013

PARENTS ARE CONCERNED



77% of parents express concern over children's sports injury risk

47% of coaches say they cannot focus enough on injury prevention

*Coaching Our Kids to Fewer Injuries: A Report on Youth Sports Safety (2012)
- safekids.org, *Google.com

'The cost of youth sports injuries in the US is probably in the hundreds of billions of dollars'

Youth Sports Injury Prevention: Suggestions from the US for Japan, Aaron L. Miller, PhD, Stanford University, 2012



PREVENTING OVERTRAINING & INJURIES ROLE OF ATHLETE MONITORING

RISK IS MULTIFACTORIAL

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Training / Competition Load

- Cumulative weekly, monthly load
- Week-to-week load increase
- High / low acute:chronic load ratio
- Spikes in training loads

Competition Schedule

- Game-to-training ratio
- Lots of playing time
- Fixture congestion
- Lots of travel

Other factors

- Inadequate warm-up
- Poor fitness
- Nutrition
- Type of sport
- Early sport specialization
- Age, etc.



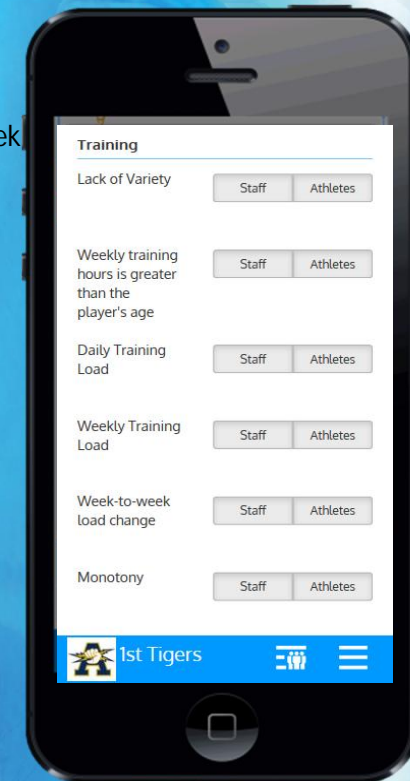
Training schedule

- Number of 'hard days' per week
- Weekly training monotony

Well-being

- Pre-game / training fatigue
- Poor sleep quality
- High level of stress
- Poor general health

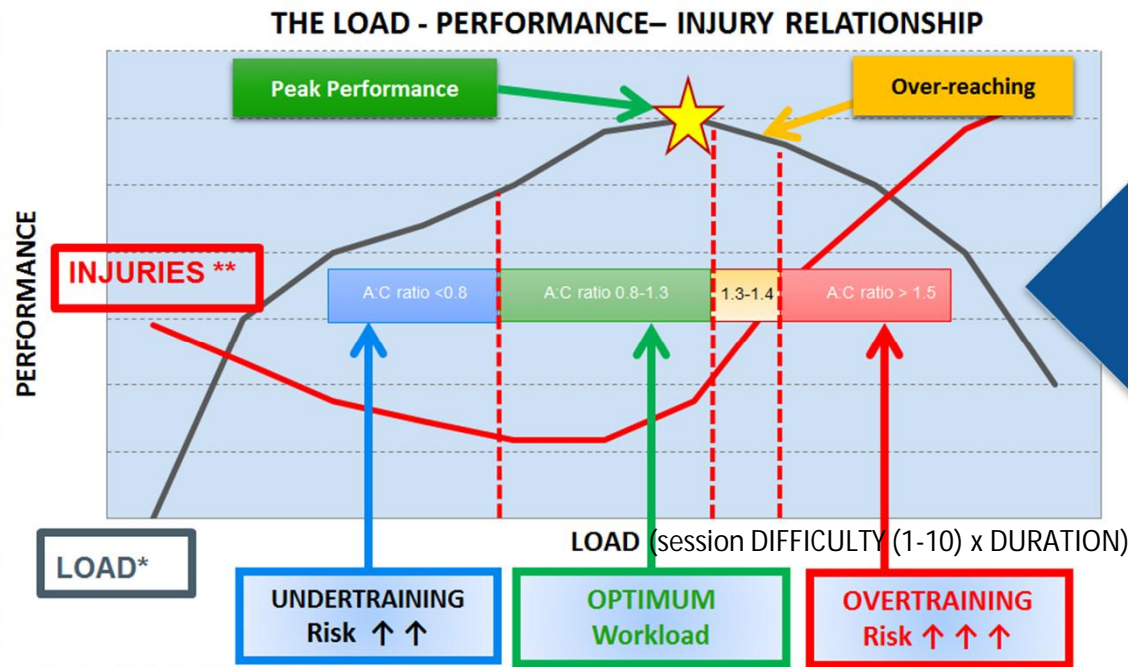
Previous injuries



'More than 50% of all sports injuries are preventable'

U.S. Center for Disease Control

EVERYTHING IS LINKED



READINESS AND RISK FLUCTUATES DAILY.

OPTIMAL WORKLOAD ZONE IS INDIVIDUAL AND CAN BE ACCURATELY IDENTIFIED AND MANAGED BY MONITORING 3 MAIN MARKERS

A:C LOAD RATIO²

WEEK-TO-WEEK LOAD INCREASE³

PRE TRAINING WELLNESS⁴
(PERCEIVED STRESS, FATIGUE, SORENESS SLEEP QUALITY)

A:C Load Ratio = Acute:Chronic Load Ratio (current week load // last 4 weeks rolling average)²

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1. Foster C. *Physiological Perspectives in Speed Skating*, 1996
 2. Gabbett TJ. *Br J Sports Med* 2016;0:1-9. doi:10.1136/bjsports-2015-095788
 3. Rogalski B Training and game loads and injury risk in elite Australian footballers., *J Sci Med Sport*, 16(6):499-503,2013
 4. Thorpe et al.: The Tracking of Morning Fatigue Status Across In-Season Training Weeks in Elite Soccer Players, *Int J Sports Physiol Perform*, 2016

FUN IS IMPORTANT TOO

WHY STUDENTS QUIT A TEAM SPORT

GIRLS

I WAS NOT HAVING FUN **38%**

I WANTED TO FOCUS MORE ON STUDYING AND GRADES **36%**

I HAD A HEALTH PROBLEM OR INJURY **27%**

I WANTED TO FOCUS MORE ON OTHER CLUBS & ACTIVITIES **22%**

BOYS

I WAS NOT HAVING FUN **39%**

I HAD A HEALTH PROBLEM OR INJURY **29%**

I WANTED TO FOCUS MORE ON STUDYING AND GRADES **26%**

I DID NOT LIKE OR GET ALONG WITH THE COACH **22%**

THE KEY PRINCIPLES

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#1 ADEQUATE **WORKLOAD** MANAGEMENT

- SMALL WEEK-TO-WEEK LOAD INCREASE
- SMALL FLUCTUATIONS IN WEEKLY LOAD
- LARGE FLUCTUATIONS IN DAILY LOAD
- MINIMUM OF ONE REST DAY/WEEK

#2 DAILY LOAD ADJUSTMENT ACCORDING TO AHLETE'S **PERCEIVED WELLNESS**

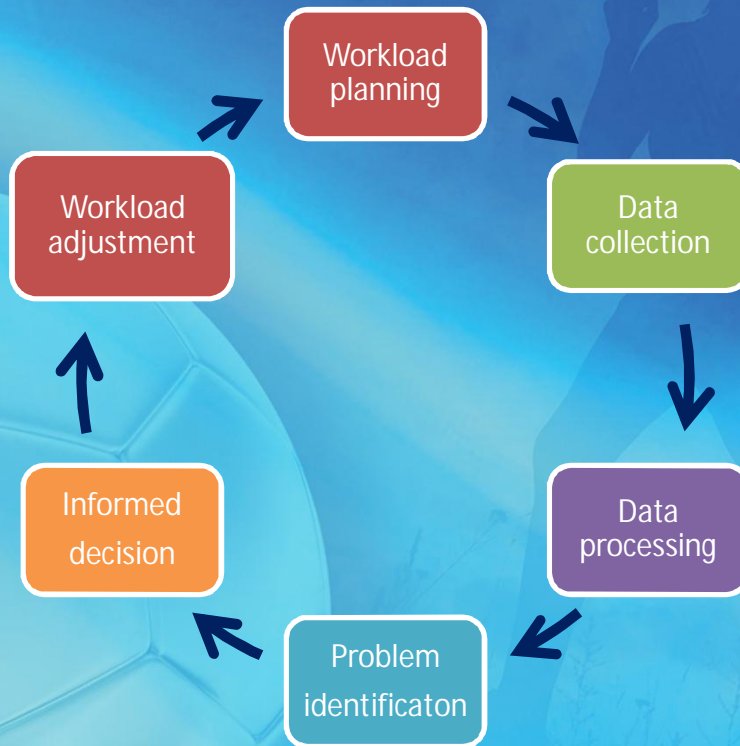
- LIFE-EVENT & SPORT-RELATED STRESS
- PERCEIVED FATIGUE
- QUALITY OF SLEEP
- GENERAL HEALTH / WELL BEING
- FUN & ENJOYMENT WITH TRAINING

References

1. Soligard T, et al.: How much is too much? (Part 2) International Olympic Committee consensus statement on load in sport and risk of illness, Br J Sports Med, 50:1030–1041, 2016.
2. Schwellnus M, et al.: How much is too much? (Part 1) International Olympic Committee consensus statement on load in sport and risk of injury, Br J Sports Med, 50:1043–1052, 2016.

THE ATHLETE MONITORING PROCESS

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“Optimizing training loads for performance and other benefits is already being adopted by professional sport. It is now time to translate similar strategies to community sport”

Caroline Finch, bmj.com, 2012

BENEFITS OF ATHLETE MONITORING

1

Better identification of individual risk

2

Faster, more accurate individualization of load and recovery strategies

3

Fewer injuries, overtraining, infections, burnout

4

Large cost-saving for teams, athletes and parents

5

Cost-effective, evidence-based approach.

6

Healthier, more enjoyable competitive sports experience

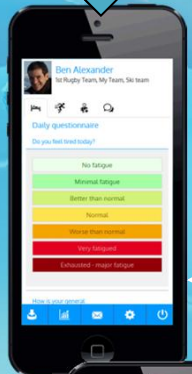


"Our injury stats have been outstanding and I am sure that AthleteMonitoring.com has played a part in us achieving that. Thanks."

Andrew Clark Head of Sport Science/Football Conditioning
Sydney FC - Hyundai A-League

HOW IT WORKS

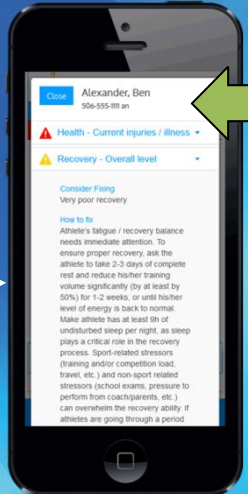
Wellness questionnaire



Athlete Enters

System calculates risk, Interpret Data & Generate Alerts

'How to fix' recommendations



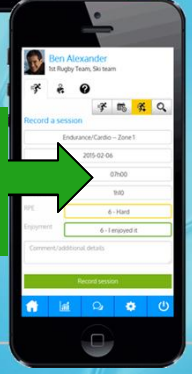
Instant access to individual & team data



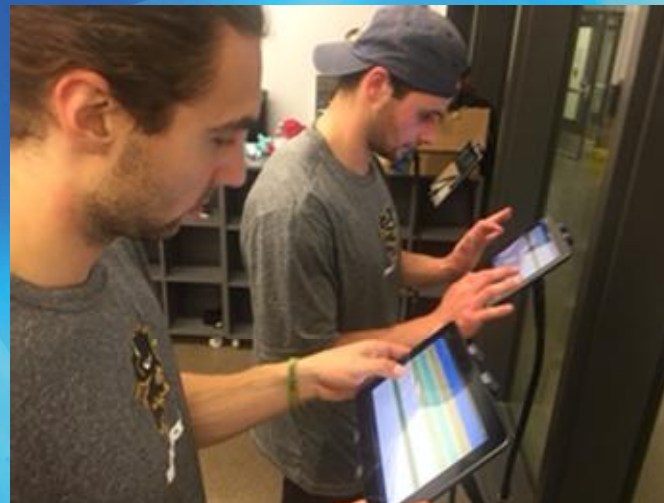
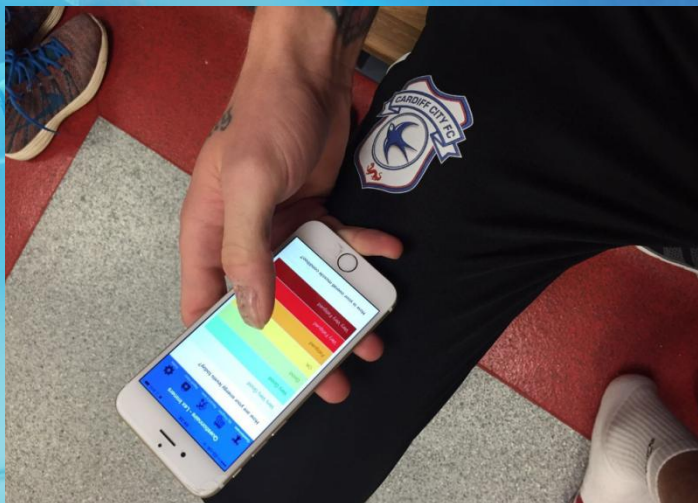
Coach receives Immediate alerts

Name	Acute Chronic RL	W-4/W Lead Inc	Monetary	Engagement	RPE Avg	Wellness	Resting Heart Rate	CMJ	Health		
Alexander, Benard	0.63	0.36	46%	89.5%	2.29	0	5.6	71/81	53.4%	52.2 cm	Limbup
Ashley, Arthur	0.56	0.34	57%	84.4%	2.8	0	4.4	71/81	88.9%	68 bpm	25.2 cm
Brown, Phil	0.62	0.36	54.5%	102.6%	4.83	0	3.5	71/81	No data	No data	No data
...

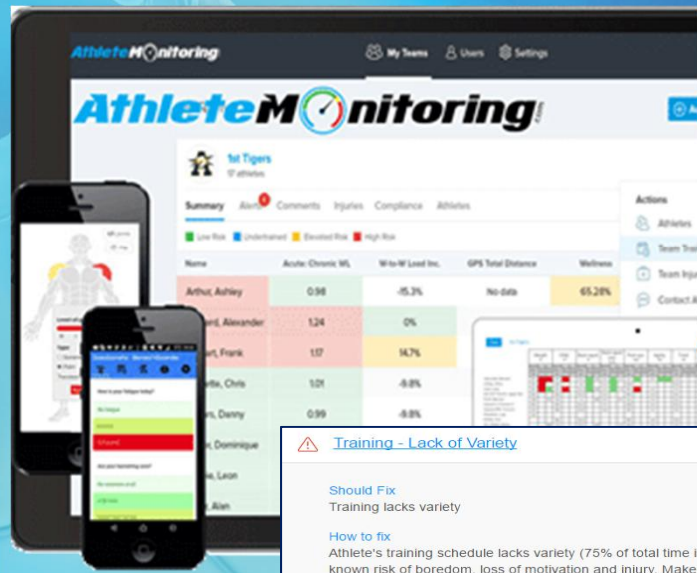
SRPE & Post-session feedback



QUICK FOR ATHLETES



EASY FOR COACHES



Workload related risk & issues

Name	Acute: Chronic WL Curr wk Next wk		W-to-W Load Inc. Curr wk Next wk		Enjoyment	Wellness	Heart Rate	Weight	Health
Alexander, Bernard	1.33	0.55	123.6%	33.6%	40%	67.36%	65 bpm ↑	65.5 kg ↑	Earache
Ashley, Arthur	1.34	0.55	-	-	-	75%	No data	No data	Bruise
Casoojee, Solly	1.31	0.55	-	-	-	75%	No data	No data	-

Health issues

Multifaceted risk & readiness assessment

Daily wellness & Readiness issues

Wellness Daily Chart 2017-01-30

Training - Lack of Variety

Should Fix
Training lacks variety

How to fix
Athlete's training schedule lacks variety (75% of total time is done in the same activity), which is a known risk of boredom, loss of motivation and injury. Make sure that athlete's uses a greater variety of training activities.

Contact athlete

SIMPLE. COMPLETE. FLEXIBLE.

Training Planning
Exercise tracking
Wellness & workload
management
Injury & illness tracking

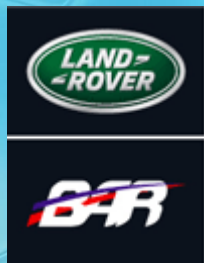
Testing & Assessment
Survey & questionnaires
Integration with wearables
Raw data import / export



"This app is very easy for our players and for our coaches. It helped us win a record third straight rugby high school national championship"

Peter Bagetta
Gonzaga College High School - Washington DC

USED EVERYWHERE. IN ALL SPORTS



Read [TESTIMONIALS](#) on AthleteMonitoring.com

CONCLUSION

- 1 Better workload management can prevent underperformances & injuries
- 2 Overtraining & injury risk factors are known and validated by research
- 3 Athlete monitoring technology facilitates issue detection, workload optimization and helps implementing evidence-based injury prevention & performance readiness strategies





SMARTER TRAINING. LESS INJURIES. BETTER RESULTS. FOR ALL.

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