

# **MASTER COACH 3**

**(USE OF) SOME TECHNOLOGIES IN HANDBALL**

**MARTA BON**

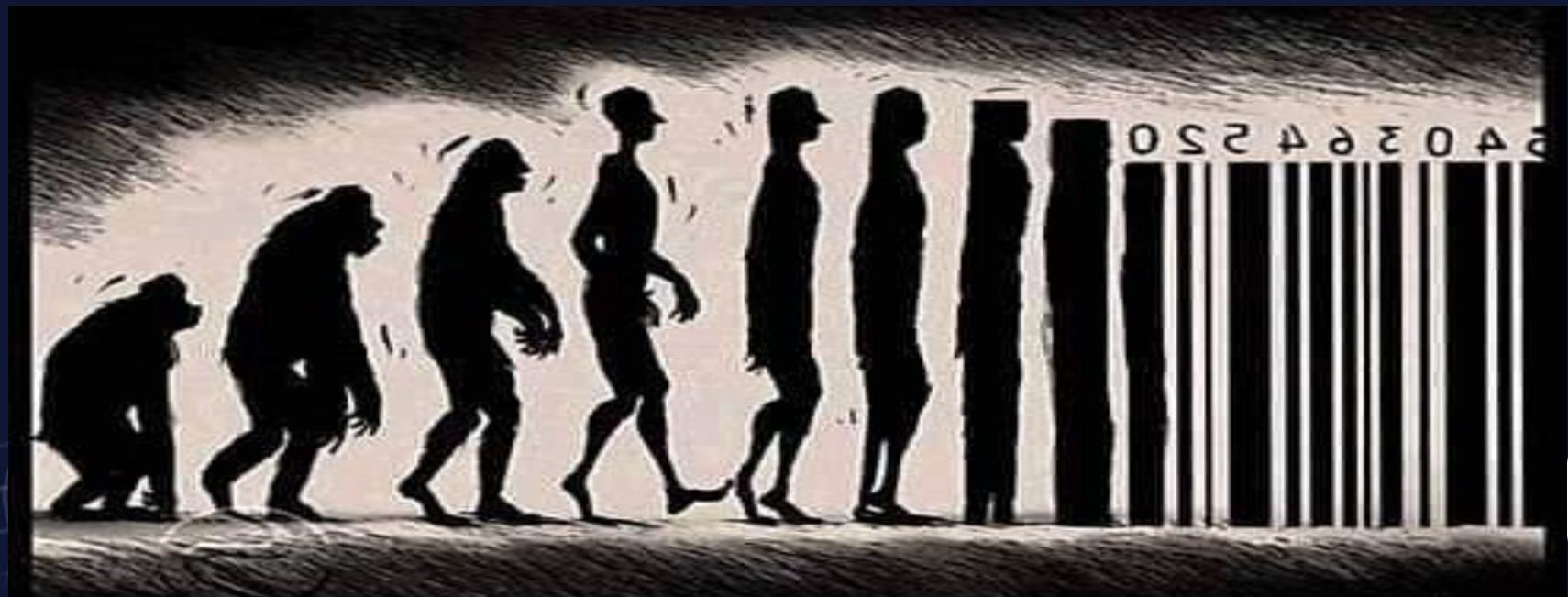


EHF Competence Academy & Network



# TOPICS

1. General **overview** of sport/ Hb\_TECH
2. TRAINING
3. MATCH /competition
4. My point of view



Technology is changing  
the world; it's changing  
our sport. It's changing...

#AdamSilver

#SayQuotable

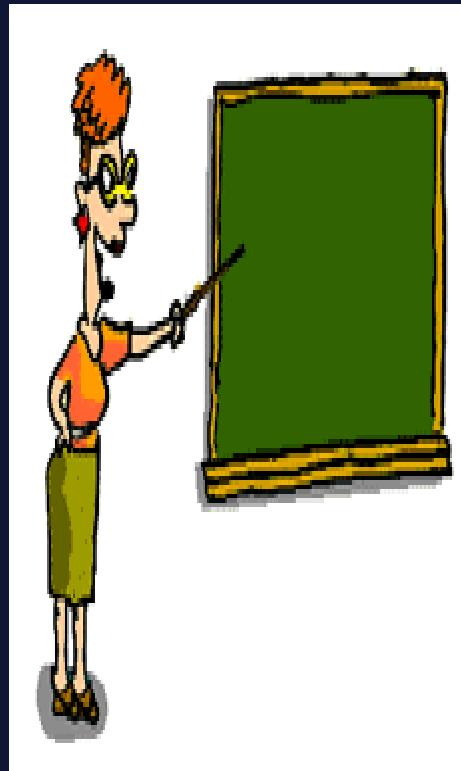
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721	2018-05-27 16:07:21	392	9,252181	32,137924 -10.856,-1.411	-10,855976	-1,410559	-1,111231	0,982297	1 field	776	0	02:1			
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781	2018-05-27 16:08:30	392	8,510197	22,043369 11.834,-2.396	11,834171	-2,396393	0,039225	1,712374	0 field	720	2	03:2			
725	2018-05-27 16:09:03	392	8,932418	33,868427 -11.606,3.053	-11,605692	3,053469	0,732436	1,331619	1 field	776	0	03:5			
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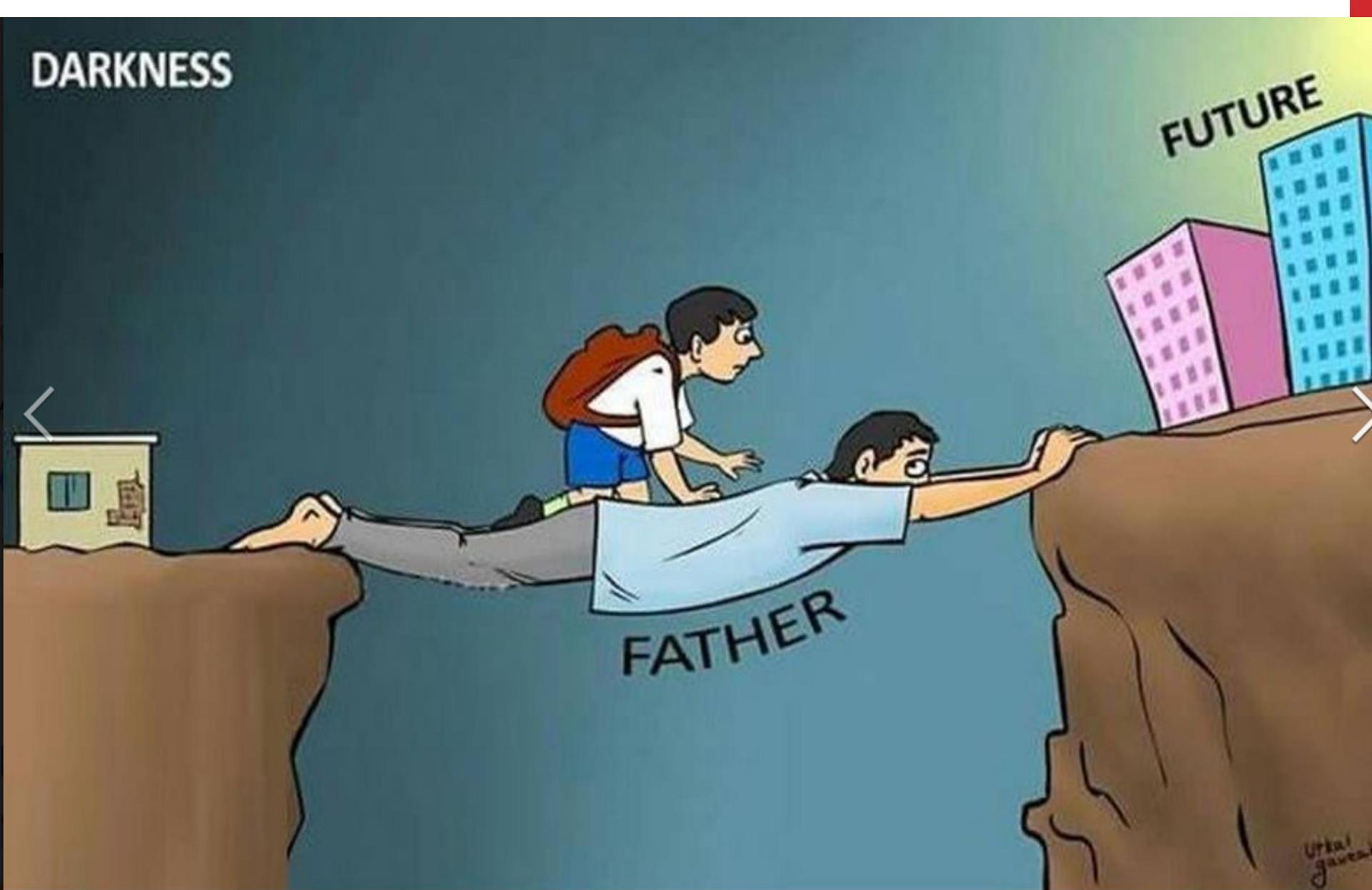
# HOW TO FILTER DATA .....?



# WHAT KIND OF COACH/PERSON YOU ARE ...?



DARKNESS



Photos from Thinking Art's post

Like Send Tag Photo Option

# WHAT IS OUR (COACHES) MISSION...?



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# APPLICATION : SPORT



A screenshot of a computer browser window displaying the website for "Sports Tracker". The page features a large banner with a woman jogging at night, the text "Power your passion for sports", and a "DOWNLOAD THE FREE APP!" button. To the right, two smartphones are shown displaying the mobile app's user interface, which includes a feed of posts from users like Mary Johnson and Mark Stevens, and a map showing a running route. The browser taskbar at the bottom shows the URL https://www.sports-tracker.com/ and the Windows Start menu.



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**TECHNOLOGY  
IS A USEFUL  
SERVANT BUT  
A DANGEROUS  
MASTER.**

Christian Lous Lange

PICTUREQUOTES.COM

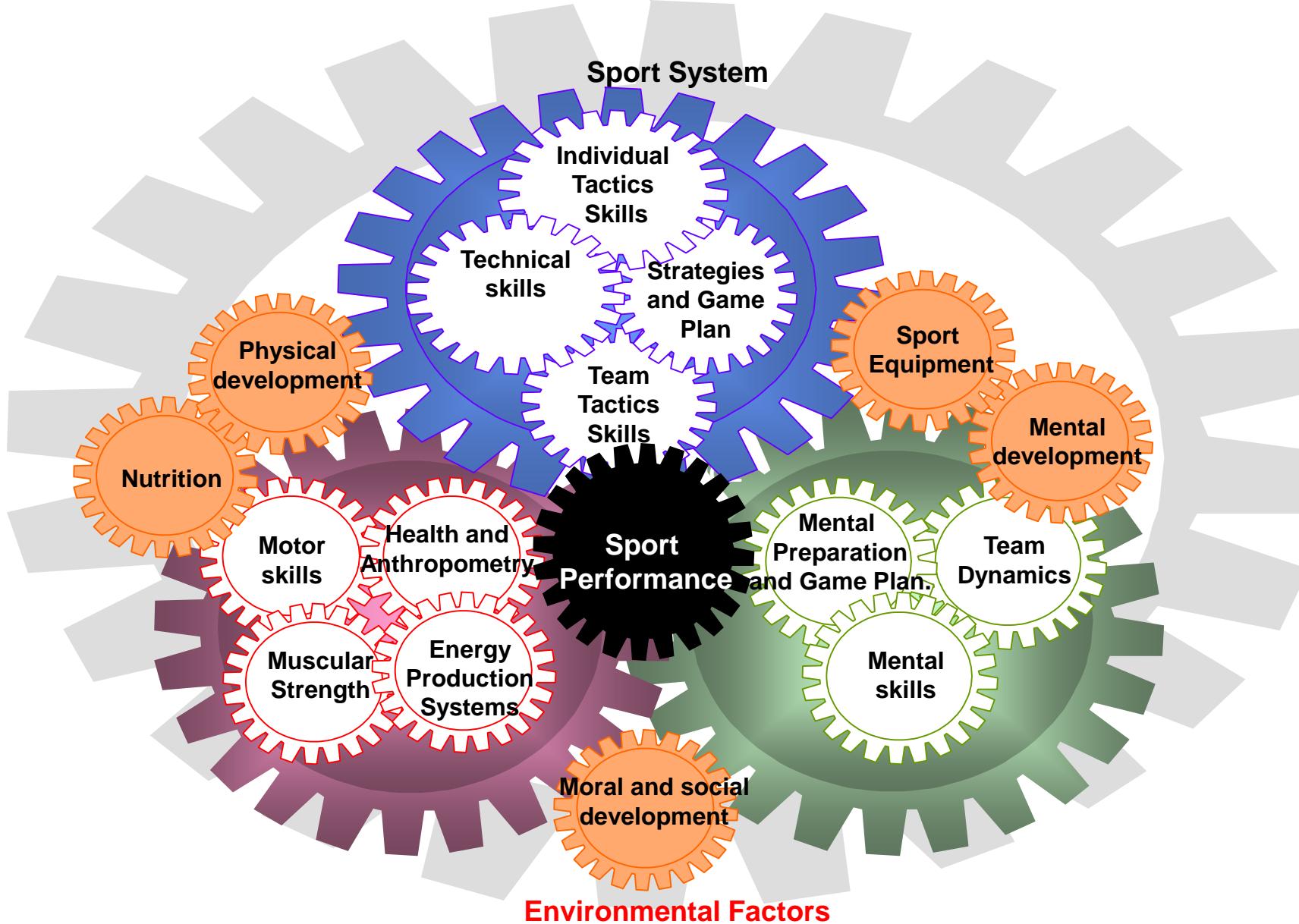
**“**Technology will not replace great teachers but technology in the hands of great teachers can be transformational.**”**

**George Couros**



EHF Competence Academy & Network





Performance factors model (inspired from Cardinal et Roy, 2004; Wenger, 2004 ).

# What is in general in SPORT ?

## SPORT in general

<https://www.youtube.com/watch?v=dqDZftgB2lw>

## OLYMPICS IN JAPAN...

<https://www.youtube.com/watch?v=1nd5O77eY3A>



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[HTTPS://WWW.YOUTUBE.COM/WATCH?V=FS1YO8PJXFM](https://www.youtube.com/watch?v=FS1YO8PJXFM)





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## NEW GOAL LINE TECHNOLOGY IN USE AT THE VELUX EHF FINAL4

A new goal line technology system, which was already successfully tested by the European Handball Federation at the EHF Cup Finals in Nantes in May, will also be in use at the VELUX EHF FINAL4 in Cologne.

The system developed by the Handvision Association, in collaboration with the French Handball Federation (FFHB), uses a special wide-angle camera fixed to the crossbar to give a complete picture of the goal line.



At the request of the referees it will now be possible for decisions on the awarding of goal to be checked on a video replay - and to answer the question as to whether the whole of the ball has crossed the line. A technician sits courtside during the match and offers the referees the opportunity to ask for the ball to be replayed in slow motion.

Fans following the game in the arena will not have to wait long for the decision, if the referee asks for assistance from the goal line technology, the game will be halted and the referees will watch the video reply provided to them by technicians next to the timekeepers table.

The system is designed to provide the referees with more complete information in certain situations, the final decision on the awarding of the goal remains with the referees. Video replay will not be used for any other match situation by the referees.

The system has been successfully tested at international matches in France, including the women's and men's EHF Cup and the Coupe de France, and in Poland, at the 2014 Men's European Handball Championship.

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ees with more complete  
information

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RE INFORMATION ON

» [2012-13 Men's CL](#)

» [VELUX EHF FINAL4](#)

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INSIDE THE EHF

16.02.2016, 14:40

» PRINT VERSION

« GO BACK

## New technology bringing innovation to handball



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### NEW TECHNOLOGY BRINGING INNOVATION TO HANDBALL

Data and technology are increasingly driving the development of major sports, not just in terms of performance on the court but also in the arena and on television as sports look to grow audiences and fan loyalty by offering that something extra.

Information on the speed of the ball, passing tempo, how high a player can jump or how quickly players can accelerate past their opponents are crucial to the modern coach, but this is data that has not been readily available in the sport to date.

For the fan at home too, new technology offers the opportunity to perhaps see the game from new angles or to engage with the action and other like-minded fans via their second screens – new innovations that could well attract a whole new generation of sports fans to the sport

EHF looks to future as it experiments with new technologies to provide coaches with detailed live statistics and bring fans closer to the game than has ever been possible before.

» Inside the EHF Channel

As part of its on-going work to further develop sport, the EHF has been working with experts from the

## WHAT FOR COACHES ?





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24 od 24 - odložišče

Element ni bil zbran: Izbrisati za povečanje razpoložljivega

## REAL-TIME PERFORMANCE ANALYTICS

Precise. Simple. Smart.



# BALL TRACKING IN HANDBALL

iBall delivers fascinating insights at the VELUX EHF  
FINAL4 2018

<https://www.dropbox.com/s/hdmy05tnfd38k06/Screen%20shot%202018-06-01%2021.43.02.png?dl=0>

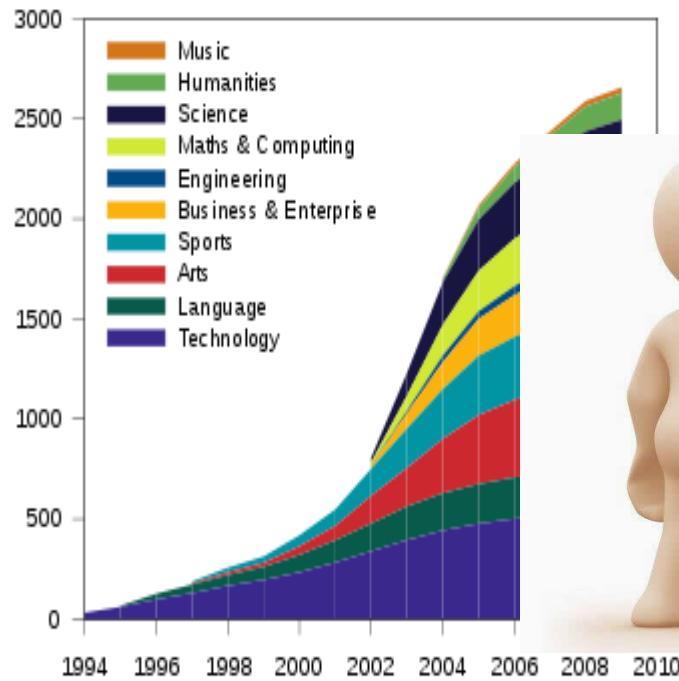
# **BALL / PLAYERS TRACKING**

<https://www.youtube.com/watch?v=ccv6qMSMsCo>

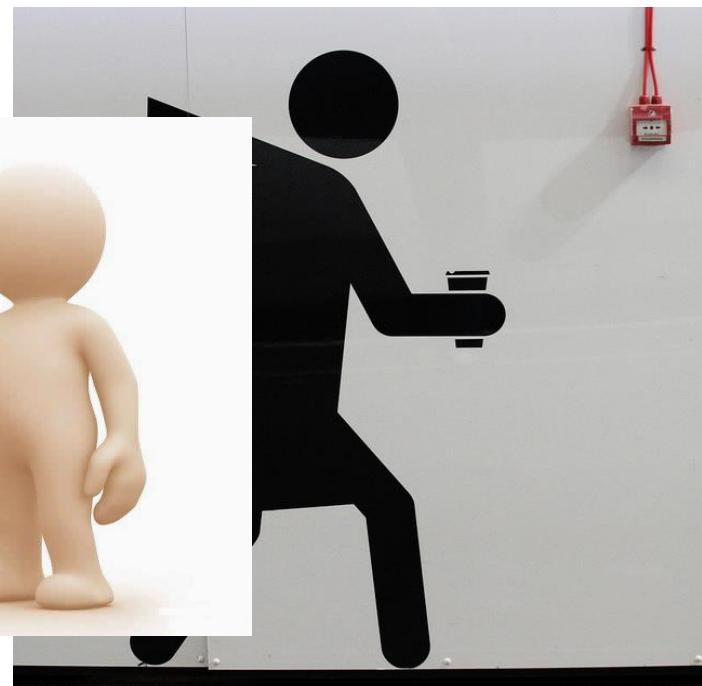
2. nd

[https://www.youtube.com/watch?v=zFr\\_2CJpFe0](https://www.youtube.com/watch?v=zFr_2CJpFe0)

## SCIENCE



## COMMERCIAL AIMS



# Time-motion analysis in women's team handball: importance of aerobic performance

CARMEN MANCHADO<sup>1</sup>  , JANEZ PERS<sup>2</sup>, FERNANDO NAVARRO<sup>3</sup>, AHREUM HAN<sup>4</sup>, EUNSOOK SUNG<sup>4</sup>, PETRA PLATEN<sup>4</sup>

<sup>1</sup>*Faculty of Education, University of Alicante, Spain*

<sup>2</sup>*Faculty of Electrical Engineering, University of Ljubljana, Slovenia*

<sup>3</sup>*Faculty of Sport Sciences, University of Toledo, Spain*

<sup>4</sup>*Faculty of Sport Sciences, Ruhr University Bochum, Germany*

## ABSTRACT

Manchado C, Pers J, Navarro F, Han A, Sung E, Platen P. Time-motion analysis in women's team handball: importance of aerobic performance. *J. Hum. Sport Exerc.* Vol. 8, No. 2, pp. 376-390, 2013  
Women's handball is a sport, which has seen an accelerated development over the last decade. Data on movement patterns in combination with physiological demands are nearly nonexistent in the literature. The aim of this study was twofold: first, to analyze the horizontal movement pattern, including the sprint

# MATCH ANALYSIS OF ELITE ADOLESCENT TEAM HANDBALL PLAYERS

MOHAMED SOUHAIEL CHELLY,<sup>1,2</sup> SOUHAIL HERMASSI,<sup>1,2</sup> RIDHA AOUDI,<sup>1,2</sup> RIADH KHALIFA,<sup>1,2</sup> OLAND VAN DEN TILLAAR,<sup>3,4</sup> KARIM CHAMARI,<sup>2,5</sup> AND ROY J. SHEPHARD<sup>6</sup>

<sup>1</sup>Research Unit ‘Evaluation and Analysis of Factors Influencing Sport Performance,’ Higher Institute of Sport and Physical Education of Ksar Said, Tunis, Tunisia; <sup>2</sup>Higher Institute of Sport and Physical Education of Ksar Said, Tunis, Tunisia; <sup>3</sup>Research Center for Sport, Health and Human Development, Vila Real, Portugal; <sup>4</sup>Department of Teacher Education and Sport, Sogn and Fjordane University College, Sogndal, Norway; <sup>5</sup>Tunisian Research Laboratory ‘Sport Performance Optimisation,’ NMSS, Tunis, Tunisia; and <sup>6</sup>Faculty of Physical Education and Health, University of Toronto, Toronto, Ontario, Canada

## ABSTRACT

Chelly, MS, Hermassi, S, Aouadi, R, Khalifa, R, Van den Tillaar, R, Chamari, K, and Shephard, RJ. Match analysis of elite adolescent team handball players. *J Strength Cond Res* 25(9): 2410–2417, 2011—The purposes of this study were to examine the activity profile of elite adolescent players during regular team handball games and to compare the physical and motor performance of players between the first and second halves of a match. Activity patterns (video analysis) and heart rate (HR) responses (telemetry) were monitored in top national-level adolescent players (18 men, aged  $15.1 \pm 0.6$  years)

## INTRODUCTION

competitive team handball is an intermittent low-intensity body-contact team sport that requires a combination of aerobic and anaerobic fitness to perform a sequence of well-coordinated activities (9,10,15,29,35). Performance in a variety of intermittent team sports has been linked to the participant’s speed, power, strength, agility, and a sustained ability to repeat short high-intensity bursts of activity throughout a match, rather than the capacity to sustain a steady submaximal work rate (16). Team handball places a heavy emphasis on sprinting, running, jumping, and throwing (17). A detailed knowledge of the

# MILIONS OF DATA

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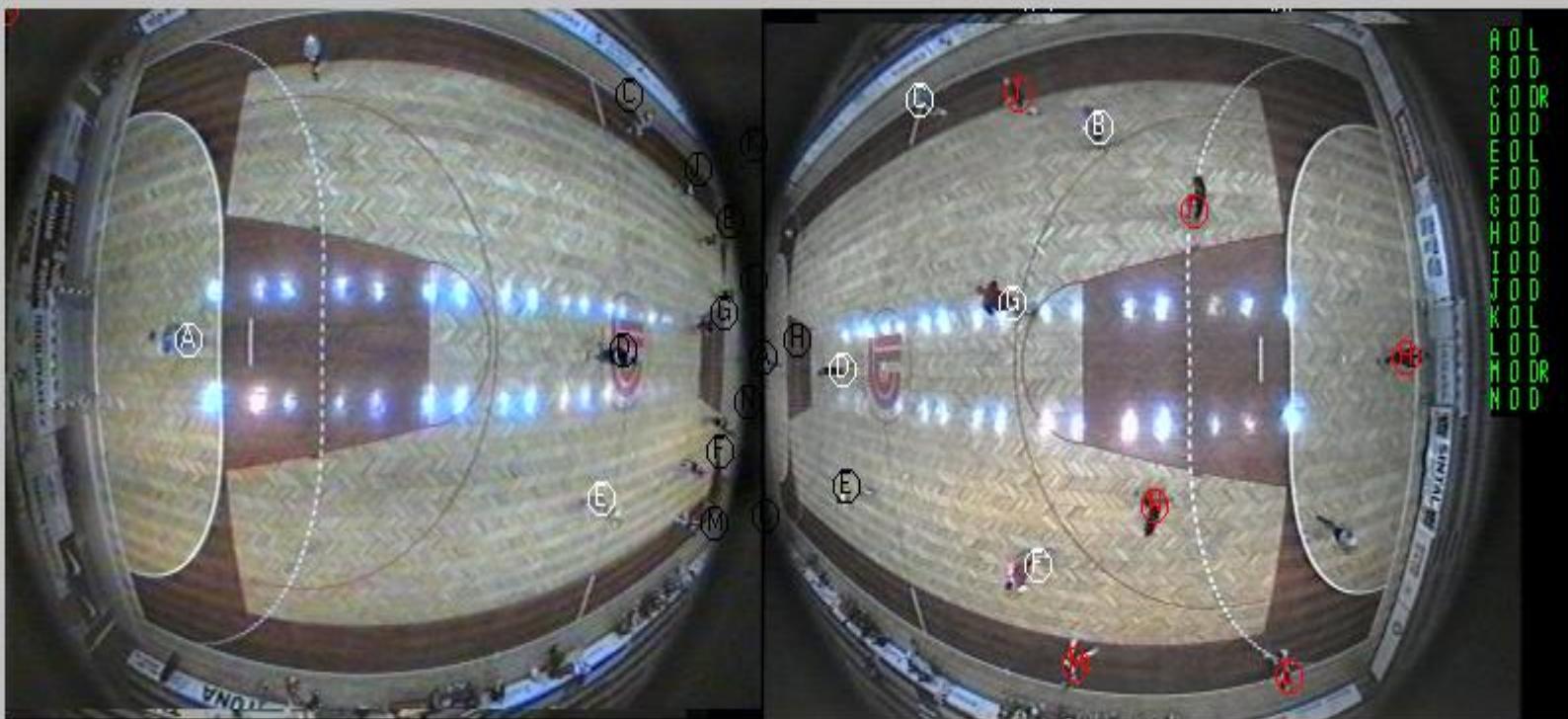
ONE EXAMPLE ` SCIENTIFICAL APPROACH IN TRAINIG/GAMES ?

## SAGIT SYSTEM

1. LOADING ,  
IN TEAM HAN
2. SAGIT – COM  
VISION SISTE

<http://vision.fe.uni-lj.si/people/JanezP.html>




 Končaj in shrani

 Nastavitev

 Izvozi podatke

 Izloži igralce

 Oznake igralcev

00:07:51:22

&lt;&lt; -25 &lt;&lt; -5 &lt; -1

+1 &gt; +5 &gt;&gt; +25 &gt;&gt;

+1S &gt;

 Sledi >

Sistemski sporocila:

Pripravljen.

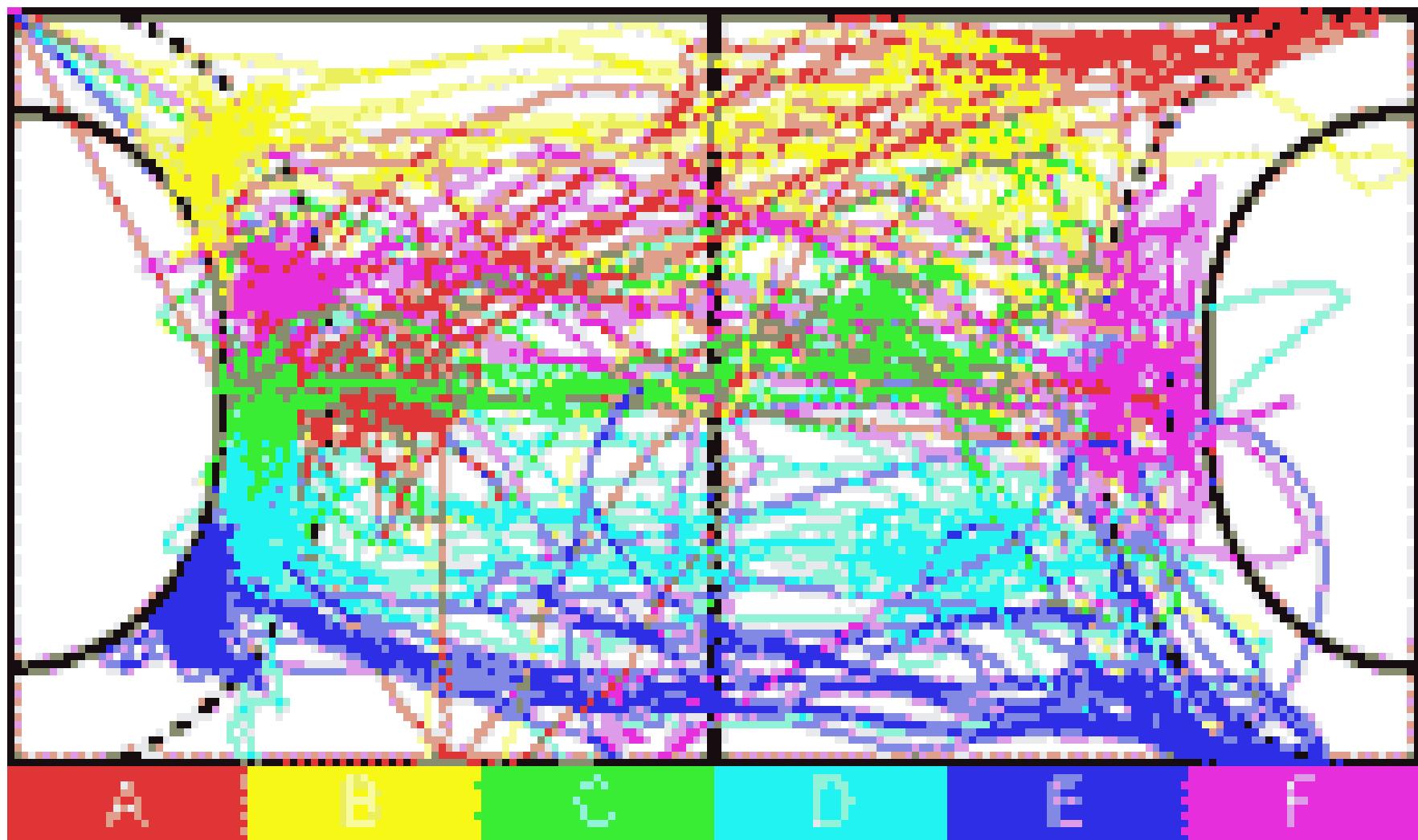
 STOP

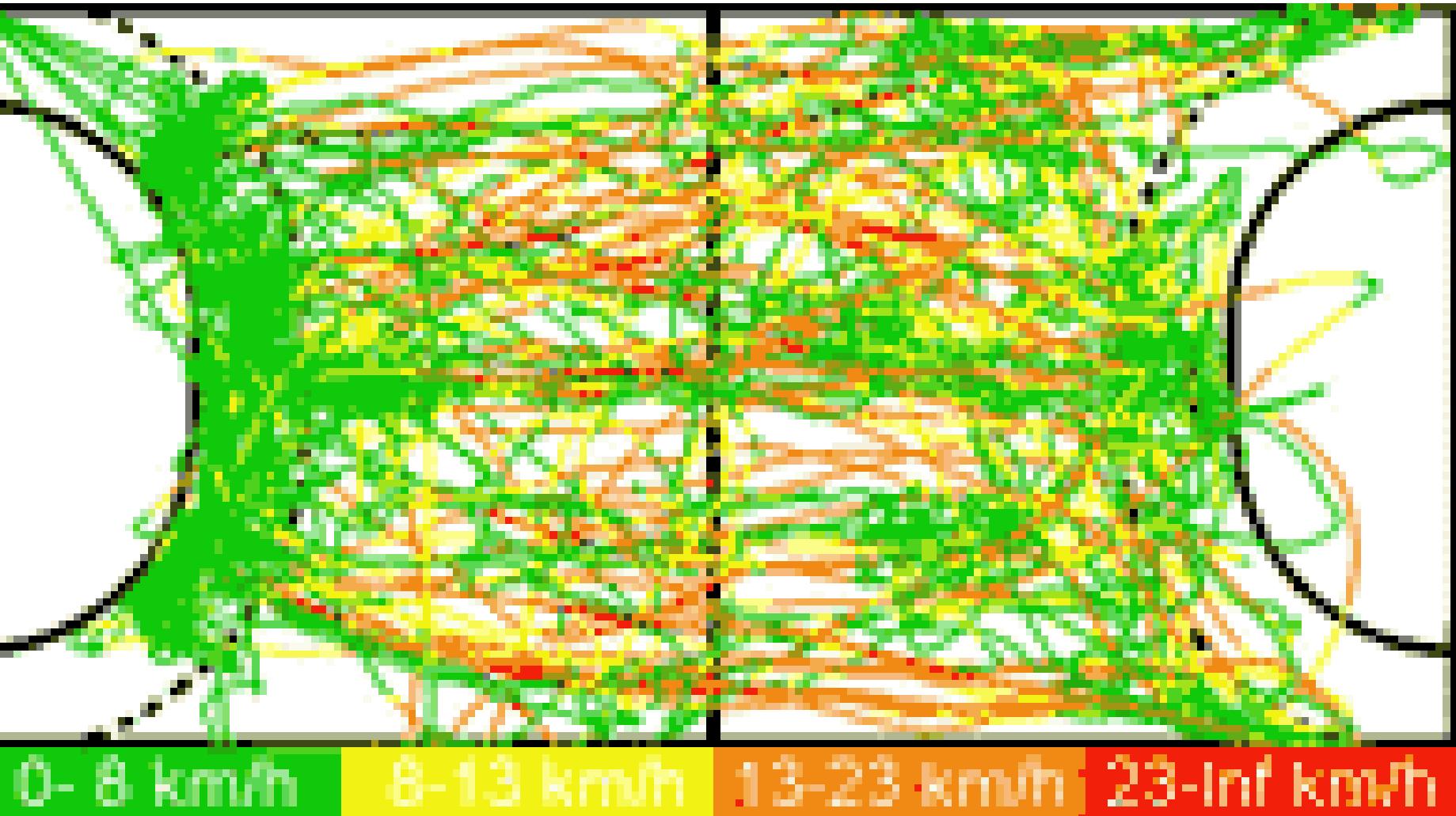
Ustvari

Igralci:

A	E	I	M
B	F	J	N
C	G	K	
D	H	L	

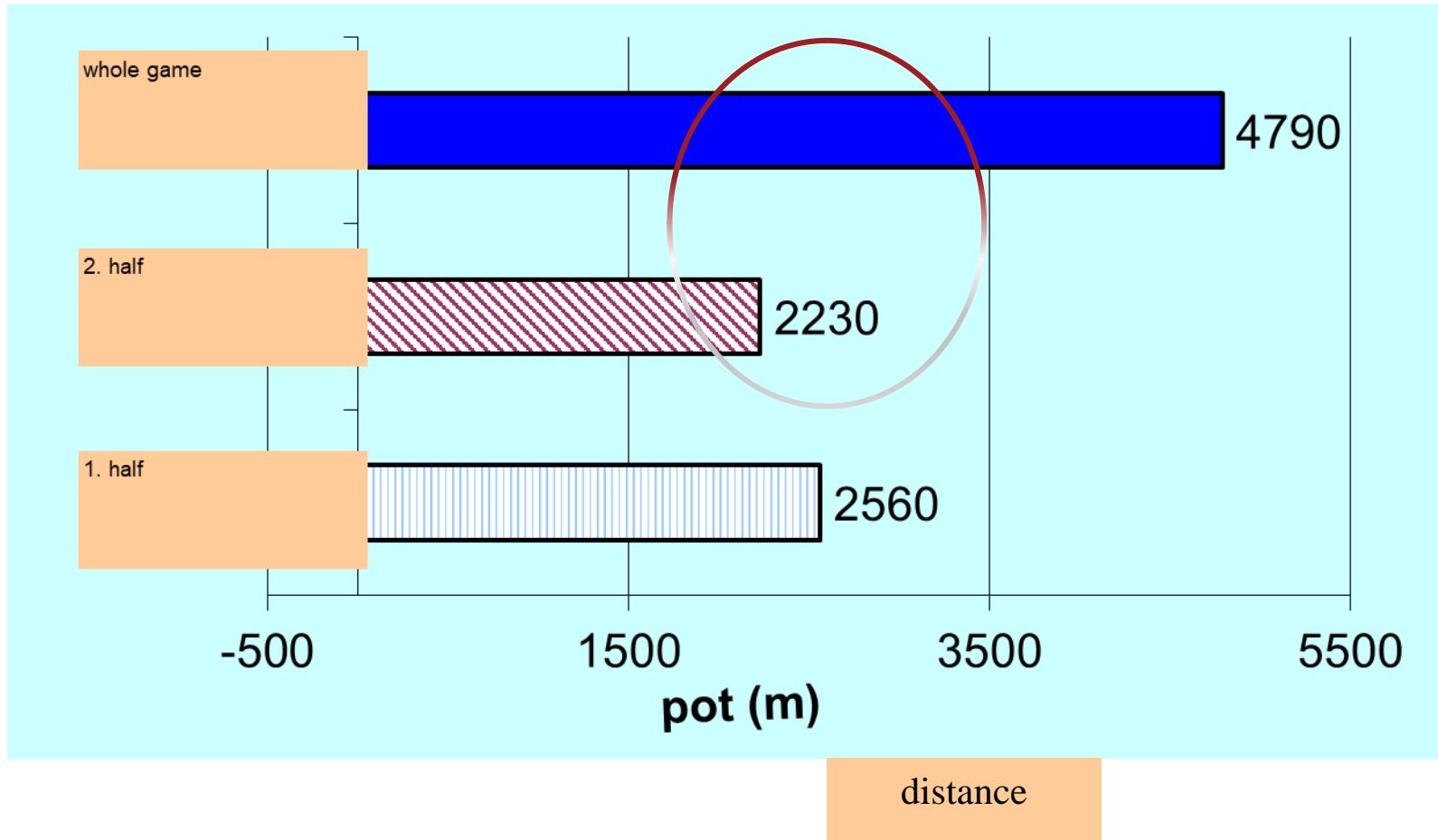
 Prikazi barve

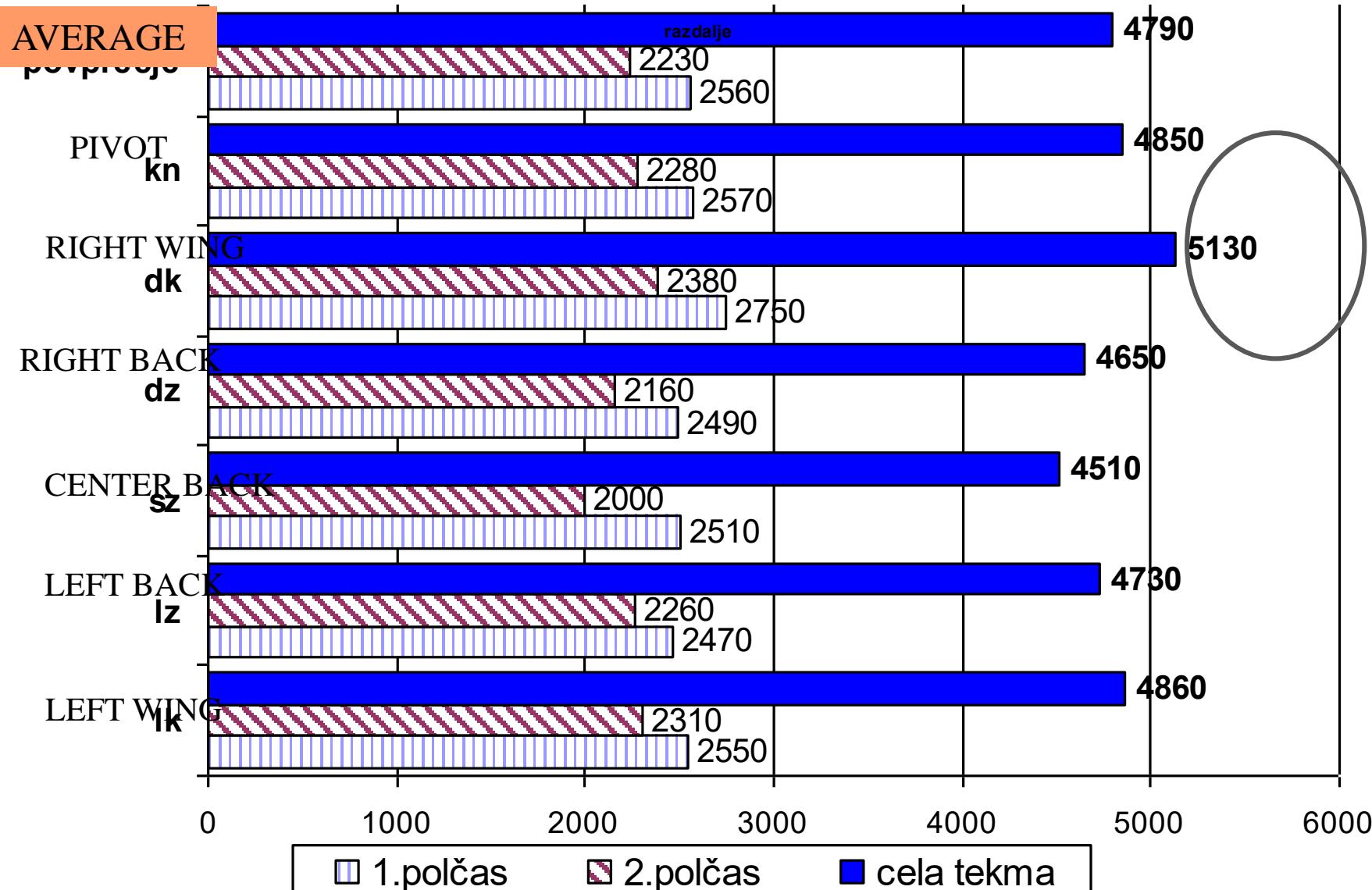


Marta Bon: SAGIT sistem \_\_\_\_source: Kovačič,  
Perš, Šibila, Pori

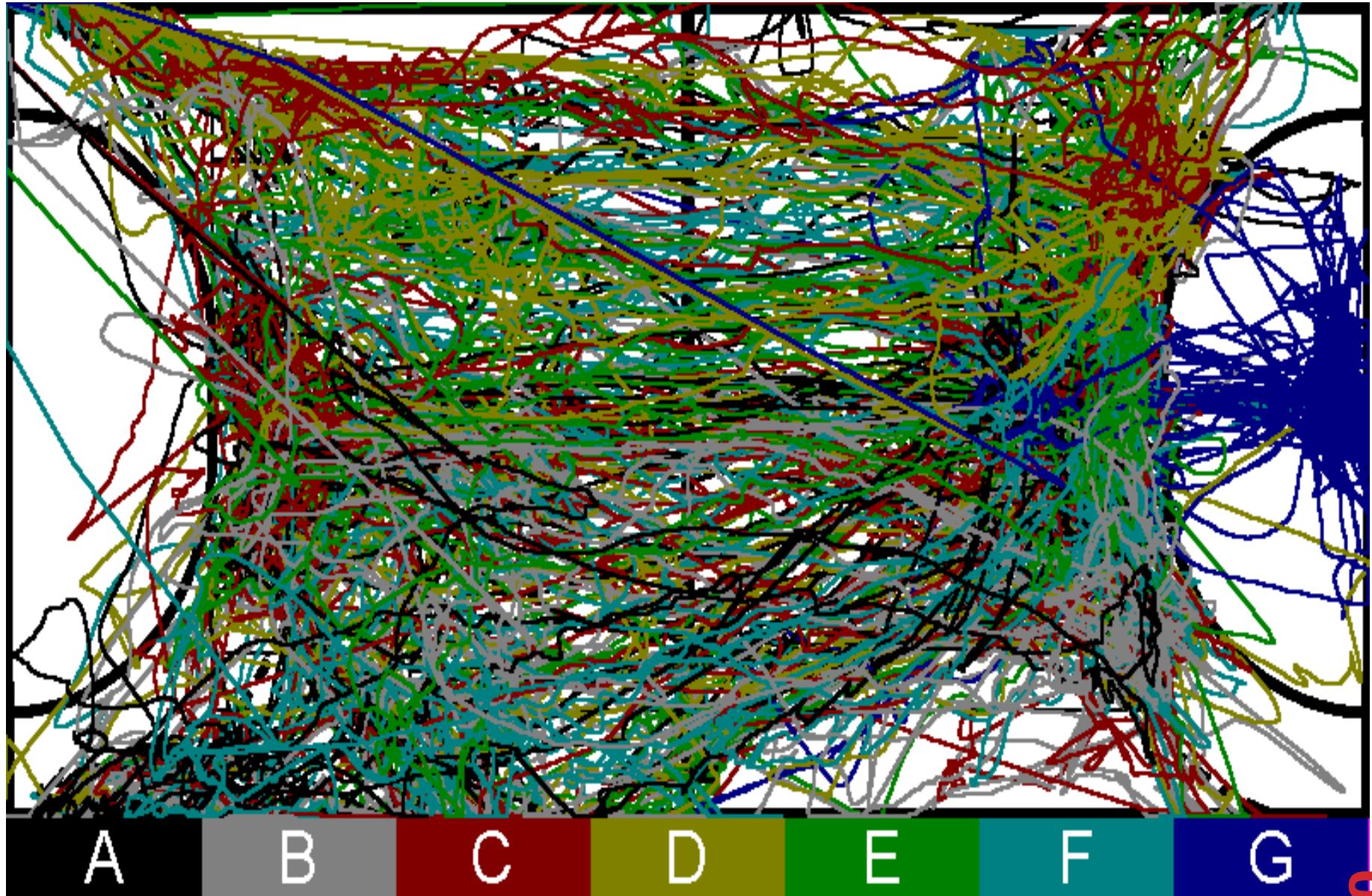
# RESULTS: ONE GAME: AMOUNT OF CYCLIC MOVEMENTS



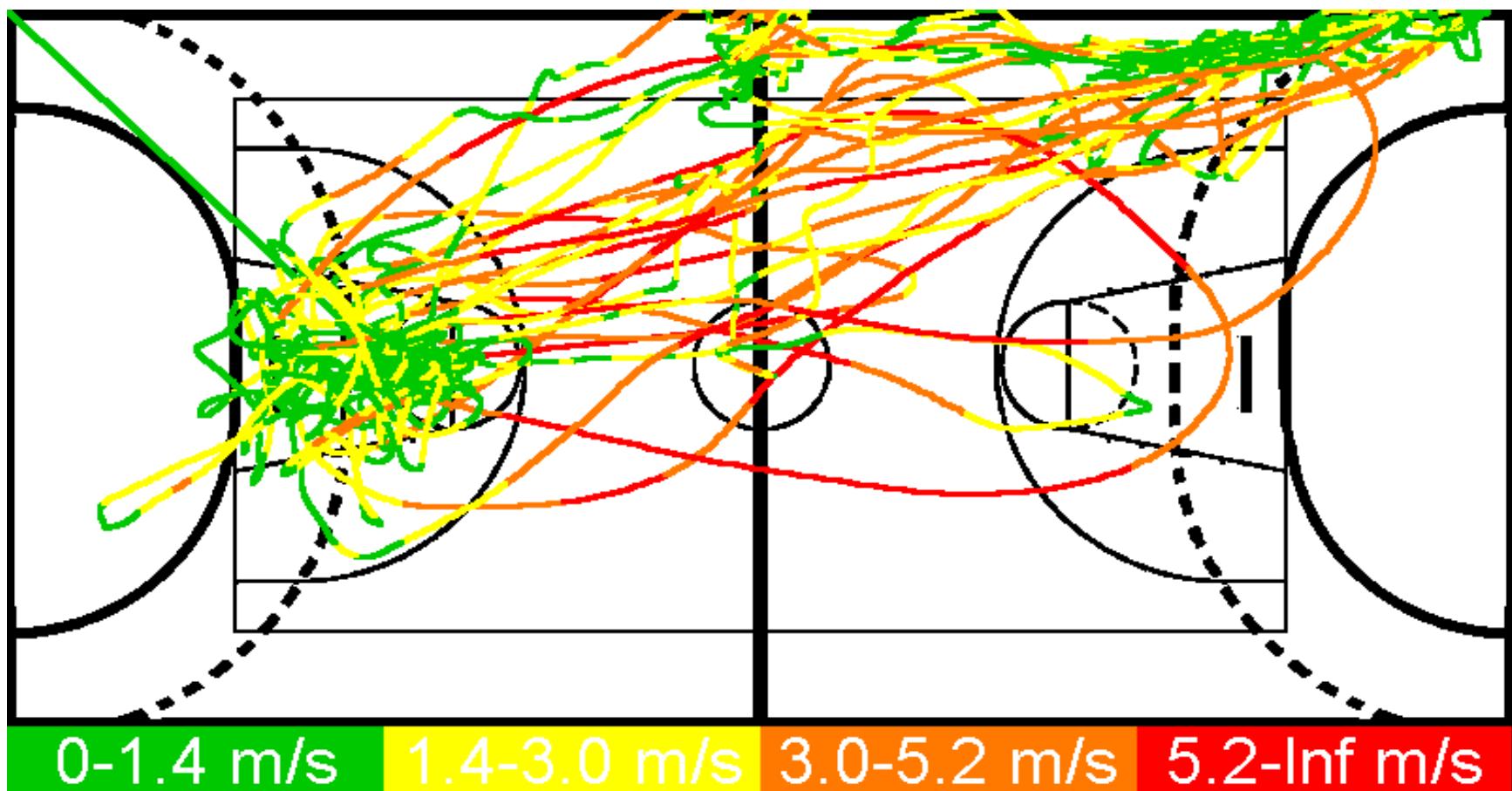
# PLAYERS



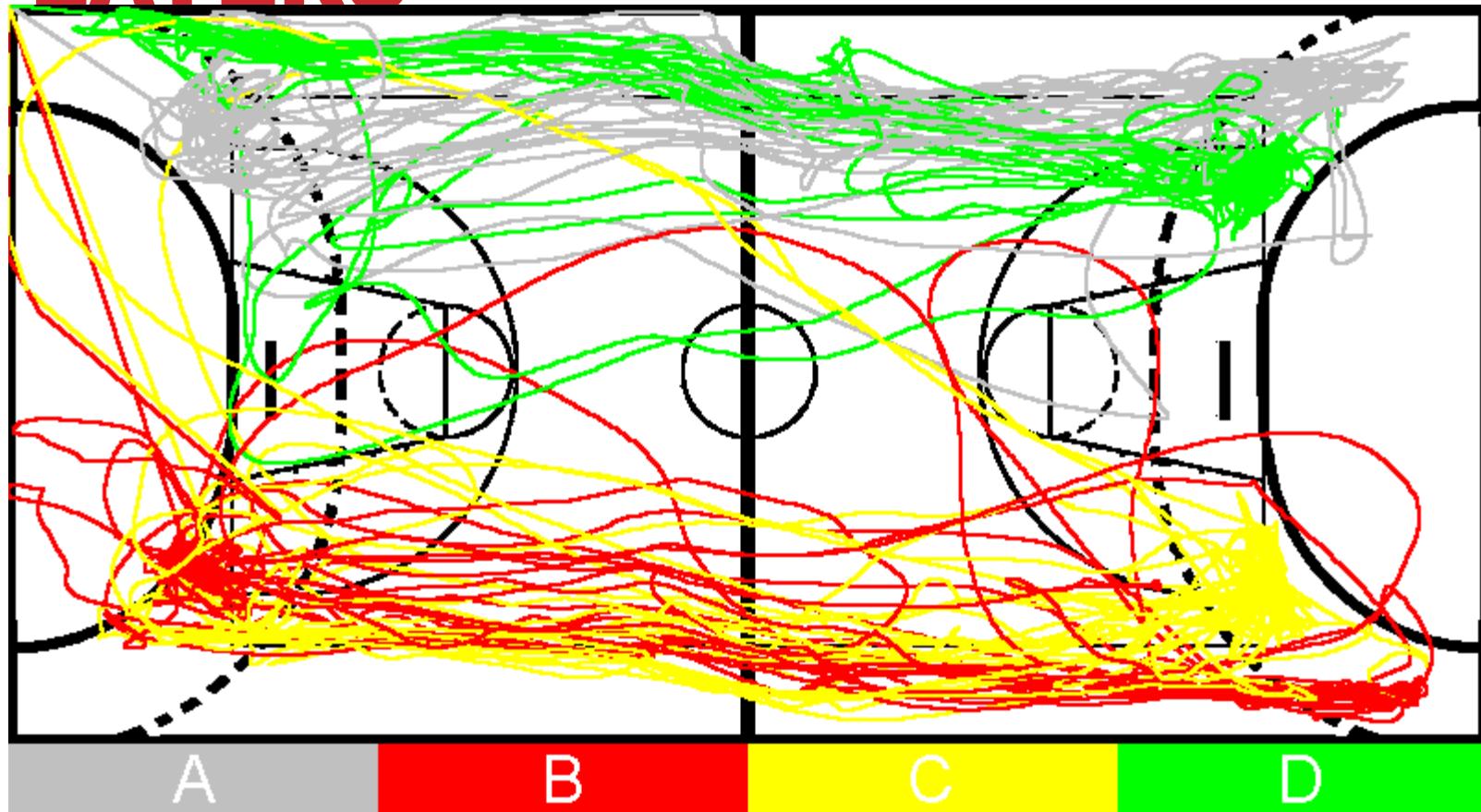
One team \_ all players



## LEFT WING, FIRST 10 MIN. OF THE GAME

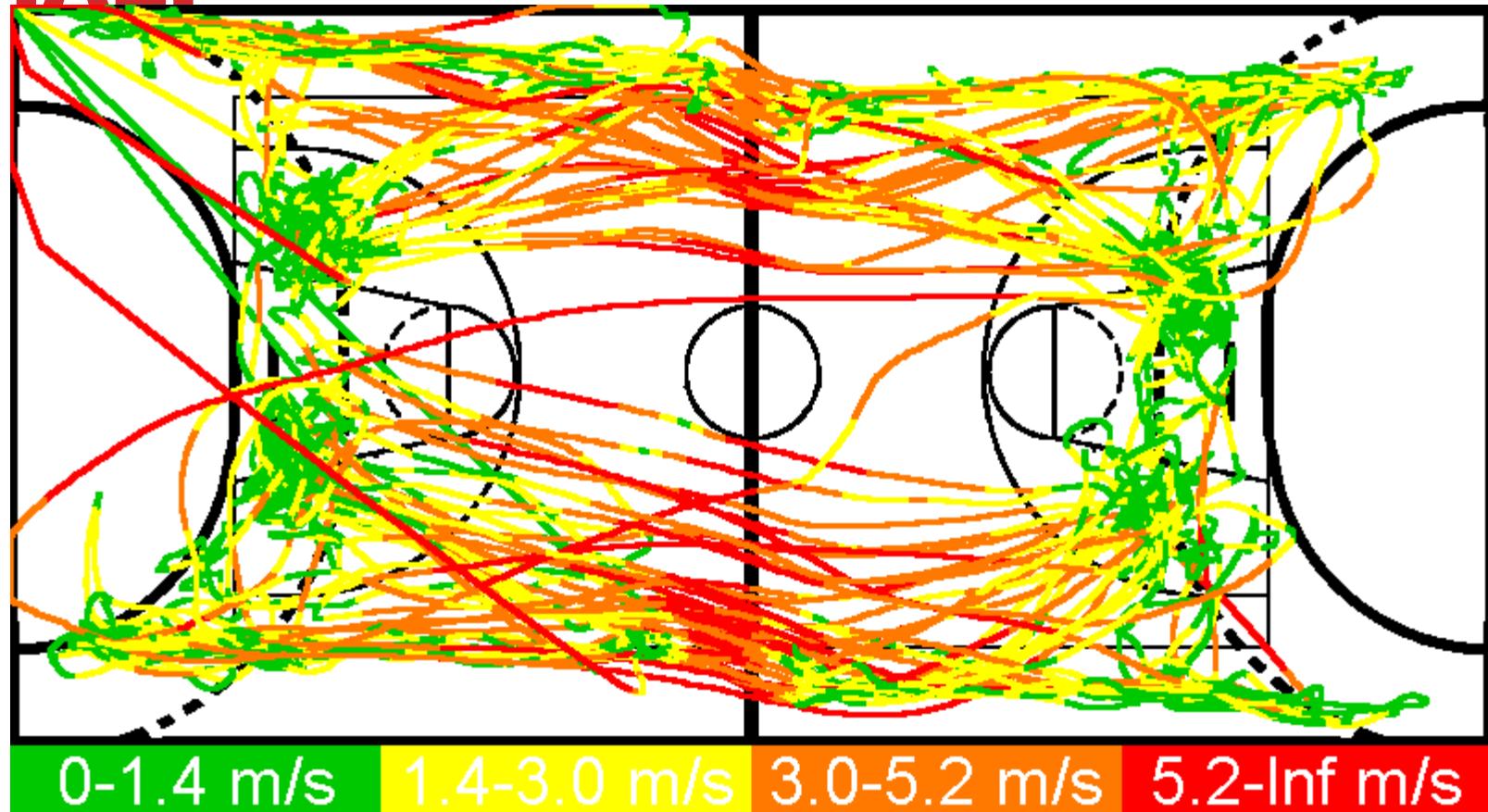


# 6:0 DEFENCE; 4 PLAYERS

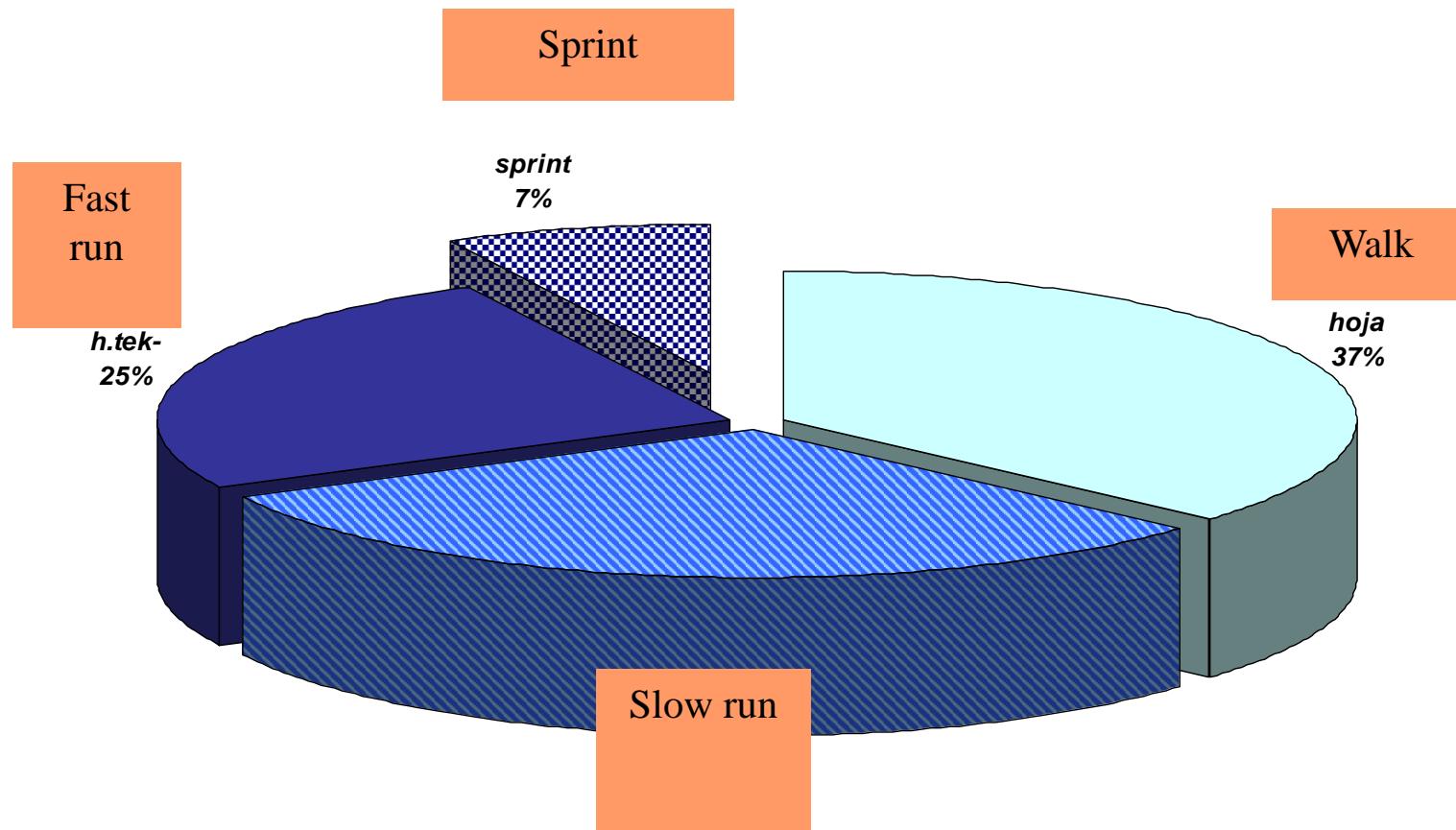


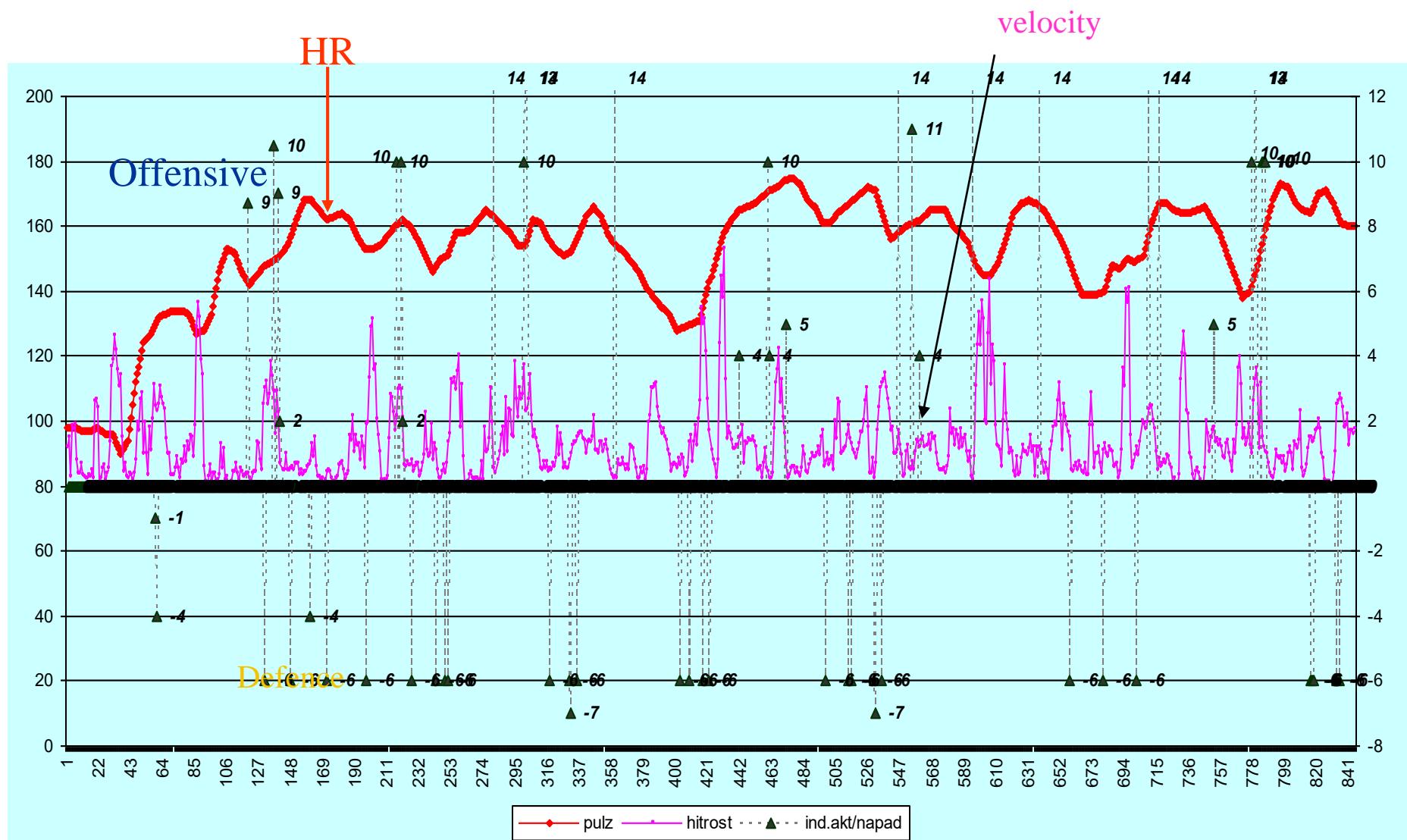
# 3: 2: 1 DEFENCE ; 1

## HALF



# INTENSIVITY (EFFORT) DURING THE GAME





# THE DATA ARE STILL VALID ....

1. DISTANCES
2. Are the differences so significantly according to placing positions, that we have to organize different training for WINGS/ BACK / PP / GK



EHF Competence Academy & Network



# CCA 15 000 ARTICLES

gle Učenjak

handball analysis motion



Približno 14.900 rez. (0,08 s)

Moj pro

## An **analysis** of fitness and time-**motion** characteristics of **handball**

MJL Alexander, SL Boreskie - The American journal of ..., 1989 - journals.sagepub.com

This study was conducted to determine some fitness parameters of two elite **handball** players, including the current world champion, and also to determine some of the time-**motion** characteristics of the game of hand ball. The VO<sub>2</sub> max values of the two players were ...

☆ 99 Navedeno v 84 virih Sorodni članki Vse različice: 3

## Injury mechanisms for anterior cruciate ligament injuries in team **handball**: a systematic video **analysis**

[PDF] researchg

OE Olsen, G Myklebust... - The American journal ..., 2004 - journals.sagepub.com

Objective To describe the mechanisms for anterior cruciate ligament injuries in female team handball. Study Design Descriptive video analysis. Methods Twenty vi...

☆ 99 Navedeno v 1003 virih Sorodni članki Vse različice: 13

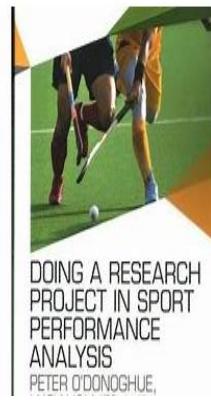
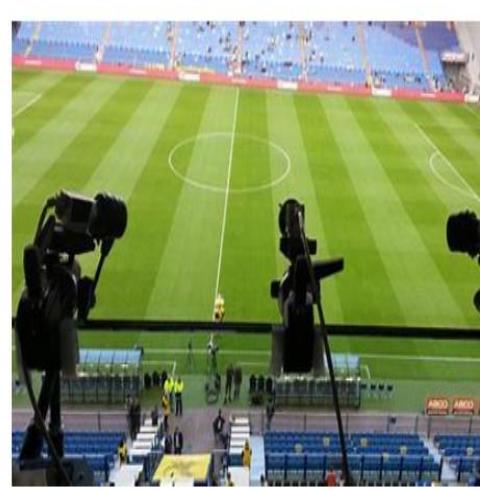
## Observation and **analysis** of large-scale human **motion**

[PDF] psu.edu

J Perš, M Bon, S Kovačić, M Šibila, B Dežman - Human Movement Science, 2002 - Elsevier

... Finally we present some results of **handball** match **analysis** to emphasize the importance of large-scale **motion** acquisition, and discuss the results. 2. Related work. A lot of research related to large-scale human **motion** has been done in the last ten years ...

☆ 99 Navedeno v 139 virih Sorodni članki Vse različice: 12



DOING A RESEARCH  
PROJECT IN SPORT  
PERFORMANCE  
ANALYSIS  
PETER O'DONOGHUE,



# The development is not OVER !!!

## Inovations in SPORT

- <https://www.hawkeyeinnovations.com/>

**“WE CANNOT SOLVE A PROBLEM BY USING THE SAME KIND OF THINKING WE USED WHEN WE CREATED THEM.**

**- ALBERT EINSTEIN**



**MJV**  
Tecnologia & Inovação



EHF Competence Academy & Network



# TECHNOLOGY-CHANGES-THE-FUTURE-OF-PROFESSIONAL-SPORTS/ ?

The image is a composite of several layers. It features a central blue-toned photograph of a soccer player in mid-air, performing a bicycle kick. Overlaid on this are various digital and technological elements: a circular binary code pattern, a world map with data overlays, and several small windows or pop-ups containing text and icons. One such window in the bottom right corner contains the text "8 od 24 - odložišč Element ni bil zbran: I elementa za novoznani". At the top of the image, there is a navigation bar for "The Medical Futurist Institute" website, which includes links for Blog, Trends, Books, About, Who we are, Search, and Speaking.

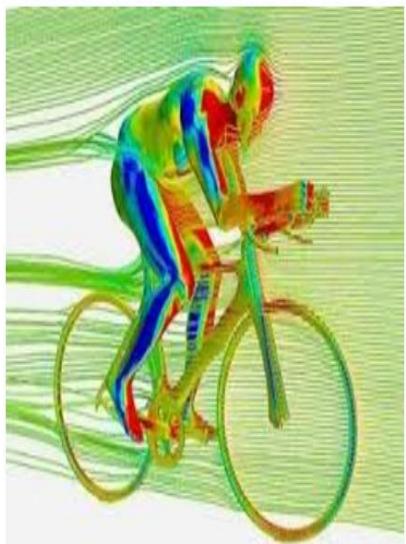
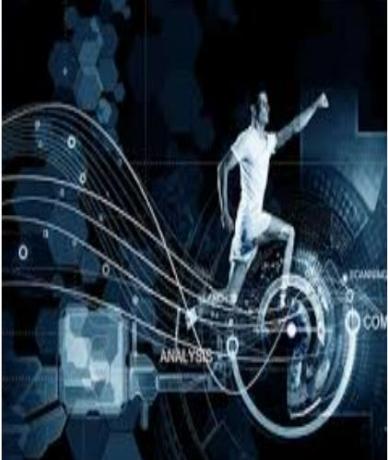
## Technology Will Change the Future of Professional Sports!

Technology is rapidly changing professional sports similarly to any other field. Let's look at how technology can help athletes to reach their maximum potential, while keeping in mind how important it is to preserve the fun and happiness sport brings in people's lives.

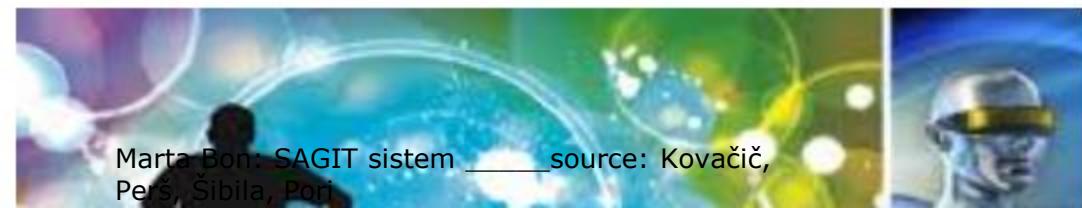
8 od 24 - odložišč  
Element ni bil zbran: I elementa za novoznani



2133 x 1600 - unknownium.net



Marta Bon: SAGIT sistem \_\_\_\_\_source: Kovačič,  
Perš, Šibila, Pori



Marta Bon: SAGIT sistem \_\_\_\_ source: Kovačič,  
Pers, Šibila, Pori

# Innovation in Sports Technology – Digital referee



July 1st, 2010 By admin Posted in Concept future Comments 8

**HTTP://ITECHFUTURE.COM/INNOVATION**

# Martin Štípáček, SGT, Střední škola součeského povězení, Perš, Štiblaj, Pori



996 × 497 - Slike so morda zaščitene z avtorskimi pravicami

# Bizline - Smart tech

YouTube

Bizline - Smart technology for sport  
한 스포츠 IT기술 - YouTube

Obišči

Deljenje z drugim

Sorodne slike:



1280 × 720 - Slike so morda zaščitene z avtorskimi pravicami

# A Virtual Reality Handball Goalkeeper Analysis System

B. Bolte<sup>1</sup>, F. Zeidler<sup>1</sup>, G. Bruder<sup>1</sup>, F. Steinicke<sup>1</sup>, K. Hinrichs<sup>1</sup>, L. Fischer<sup>2</sup> and J. Schorer<sup>2</sup>

<sup>1</sup>Department of Computer Science, University of Münster, Germany

<sup>2</sup>Department of Sport Science, University of Münster, Germany

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## Abstract

### Abstract

*Understanding how professional handball goalkeepers acquire skills to combine decision-making and complex motor tasks is a multidisciplinary challenge. In order to improve a goalkeeper's training by allowing insights into their complex perception, learning and action processes, virtual reality (VR) technologies provide a way to standardize experimental sport situations.*

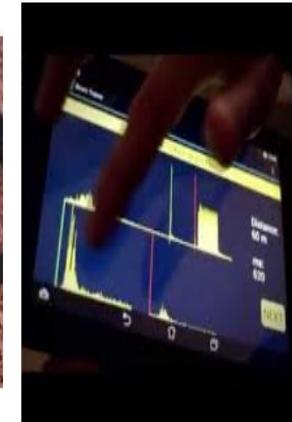
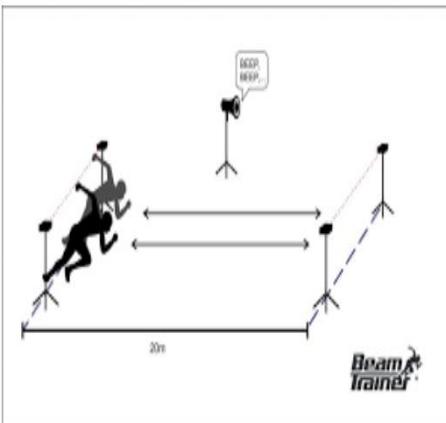
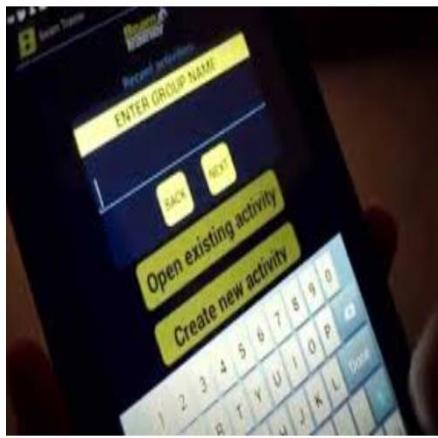
*In this poster we describe a VR-based handball system, which supports the evaluation of perceptual-motor skills of handball goalkeepers during shots. In order to allow reliable analyses it is essential that goalkeepers can move naturally like they would do in a real game situation, which is often inhibited by wires or markers that are usually used in VR systems. To address this challenge, we developed a camera-based goalkeeper analysis system, which allows to detect and measure motions of goalkeepers in real-time.*

Categories and Subject Descriptors (according to ACM CCS): Computer Graphics [I.3.7]: Three-Dimensional Graphics and Realism—Virtual reality Information Interfaces and Presentation [H.5.1]: Multimedia Information Systems—Artificial, augmented, and virtual realities

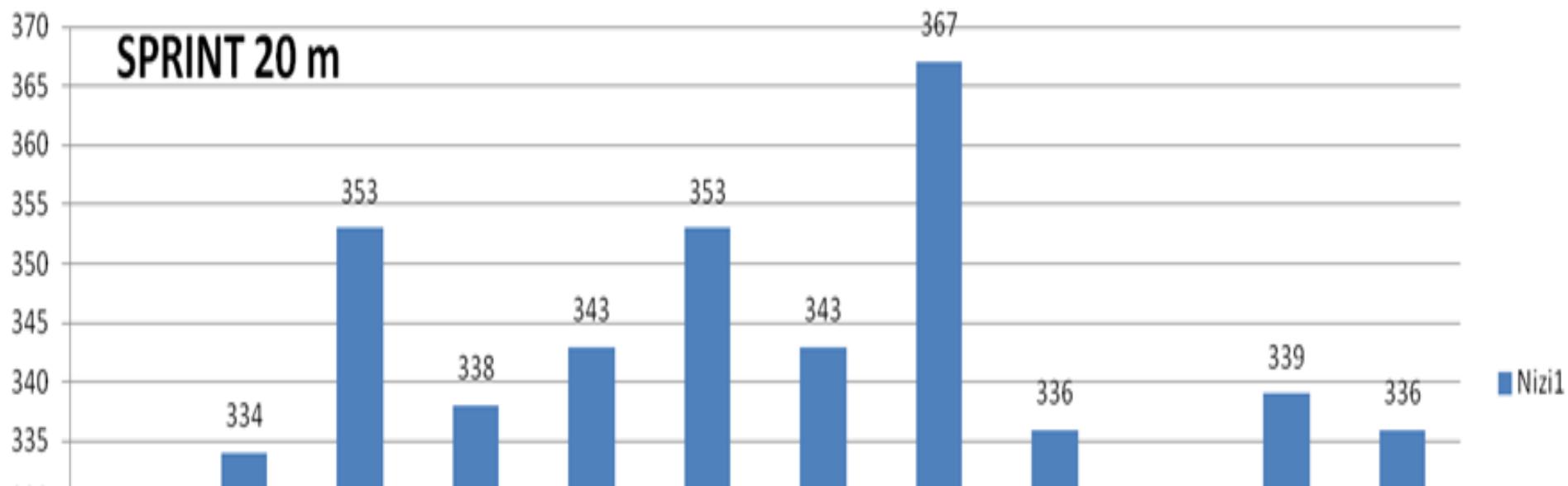
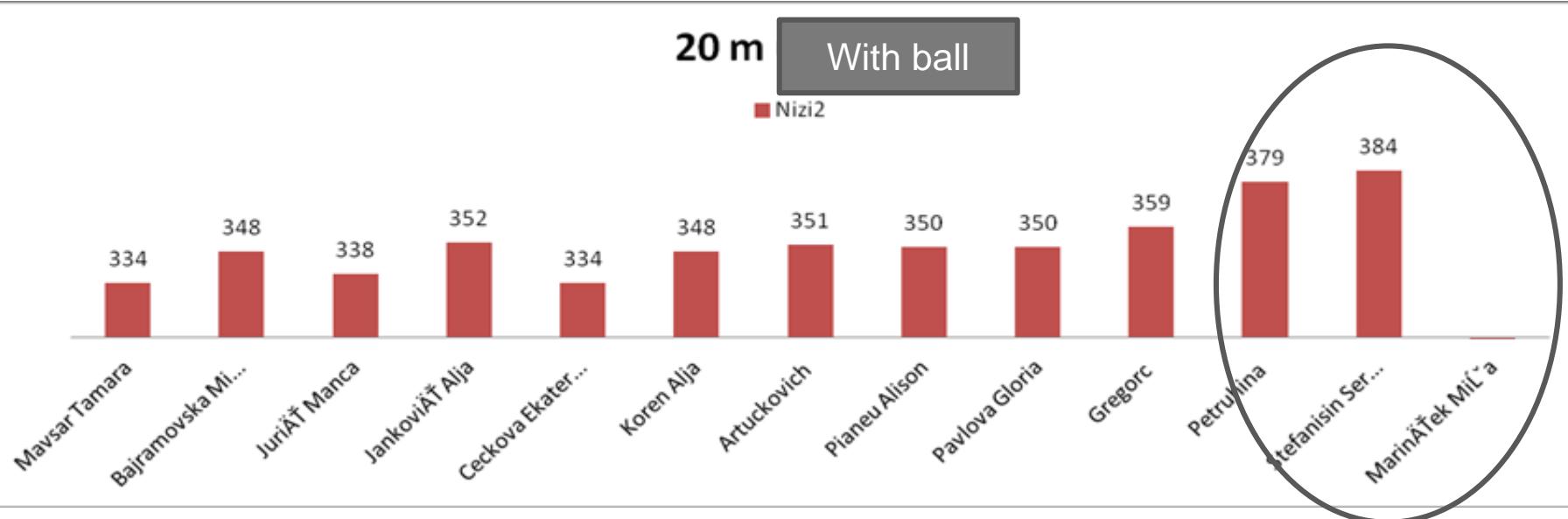
# MY EXPERIANCE: WHAT IS REALLY USEFUL IN TRAINING ?



# PHOTO CELLS > NOT ONLY SPEED !!!!



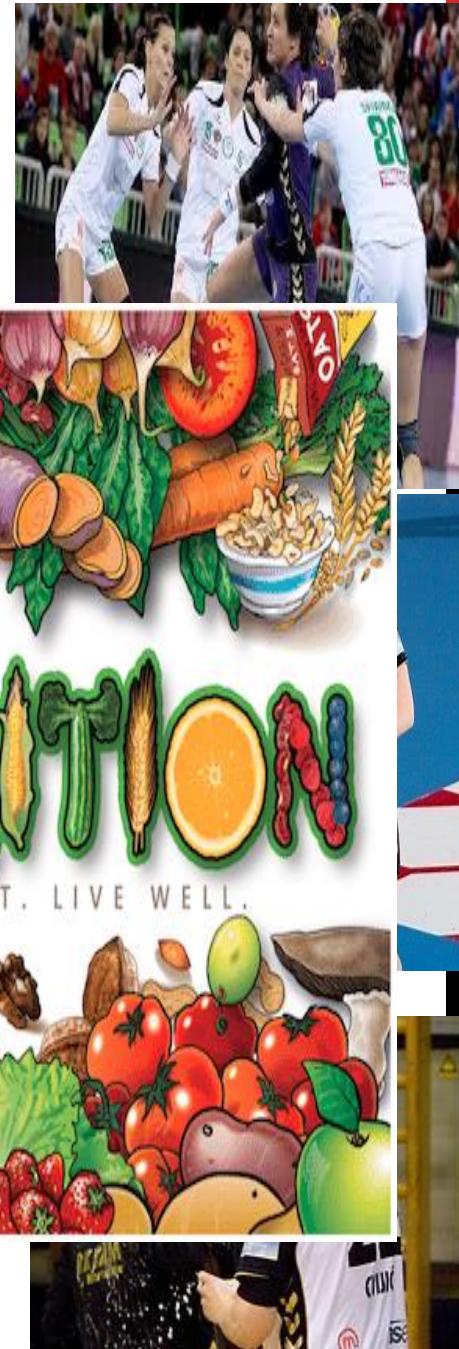
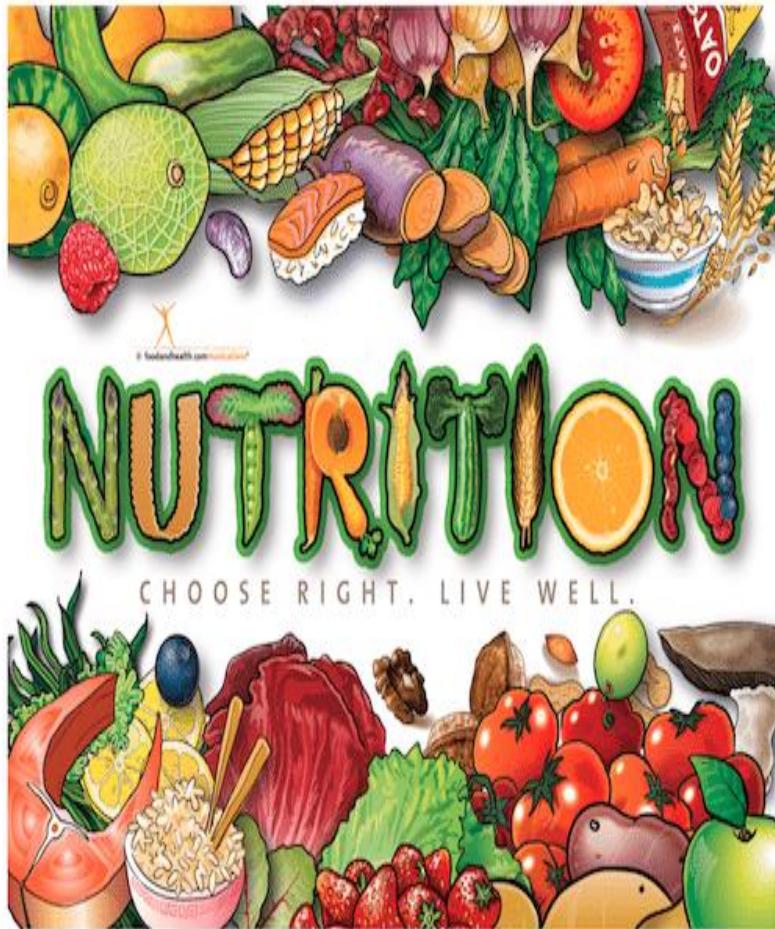
# SPEED\_ PHOTO CELLS \_ KRIM



[HTTPS://WWW.YOUTUBE.COM/WATCH  
V=GI7JDRFXIBQ](https://www.youtube.com/watch?v=GI7JDRFXIBQ)



# „STORY“ ABOUT BODY MASS INDEX \_ AND NUTRICIONISEM /

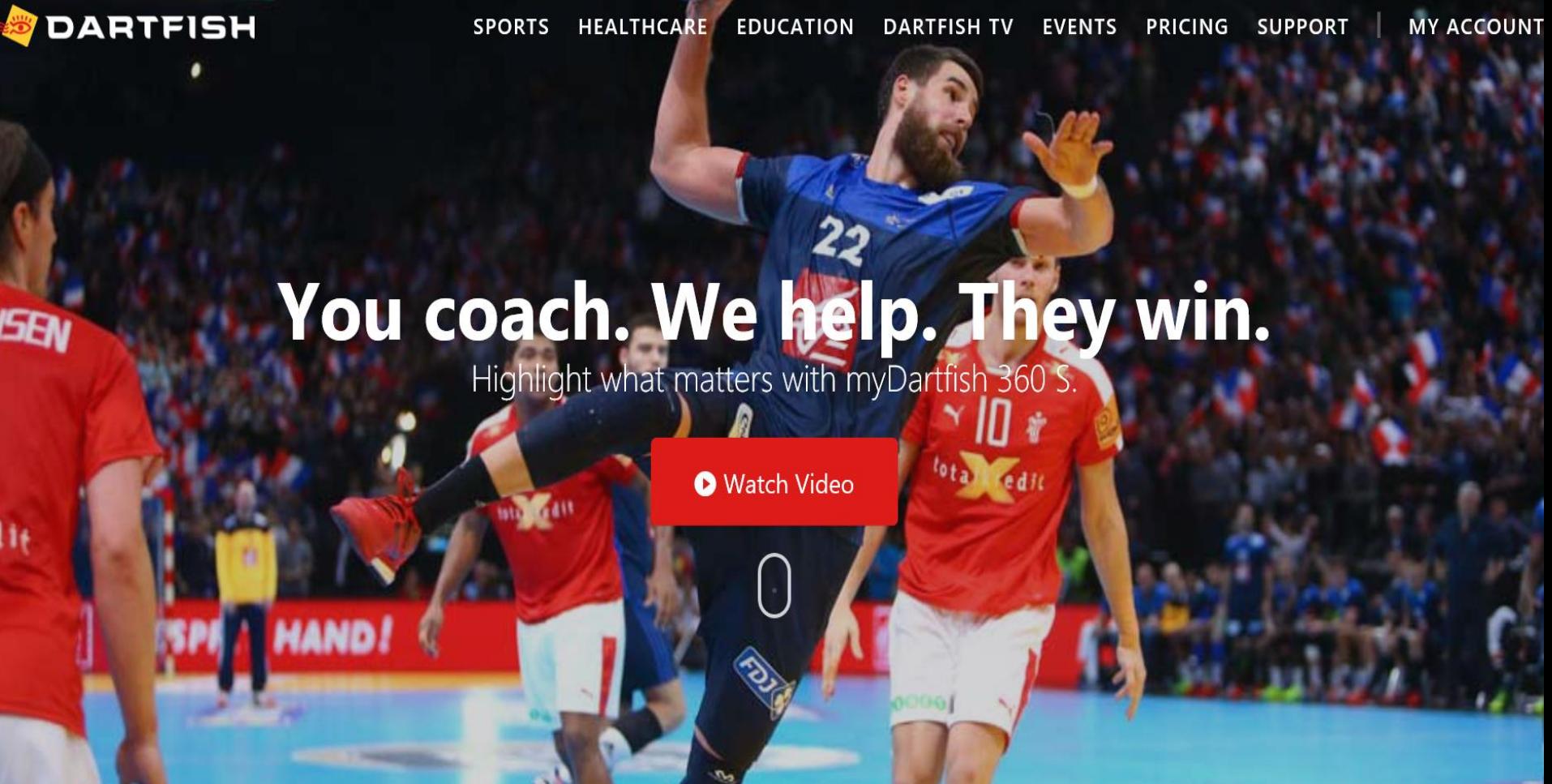


# GAME



# VIDEO ANALYSES

<http://www.dartfish.com/sports>



**DARTFISH**

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You coach. We help. They win.

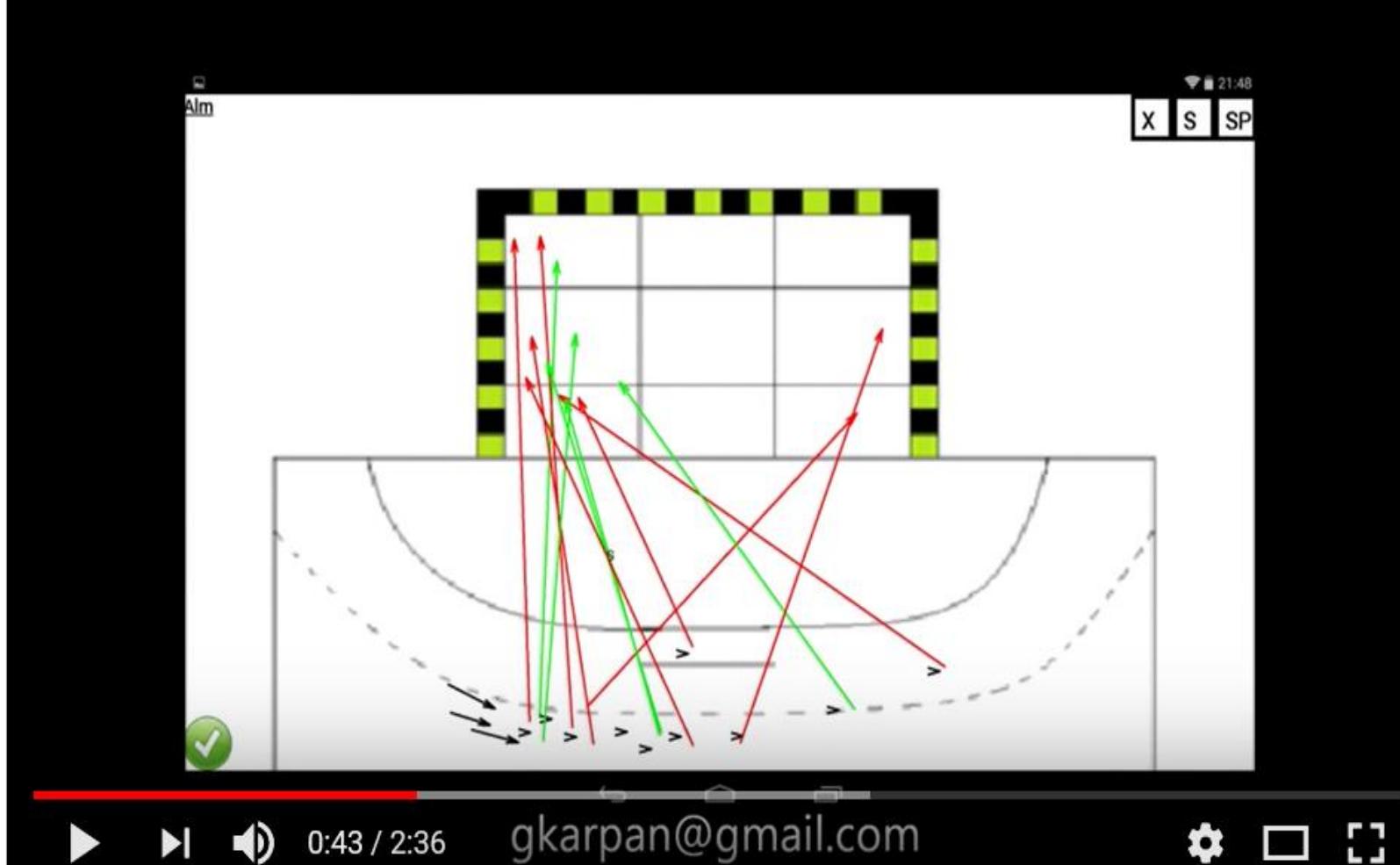
Highlight what matters with myDartfish 360 S.

Watch Video

0

# GOLKEEPER

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=ZXNQDOD46EO](https://www.youtube.com/watch?v=ZXNQDOD46EO)



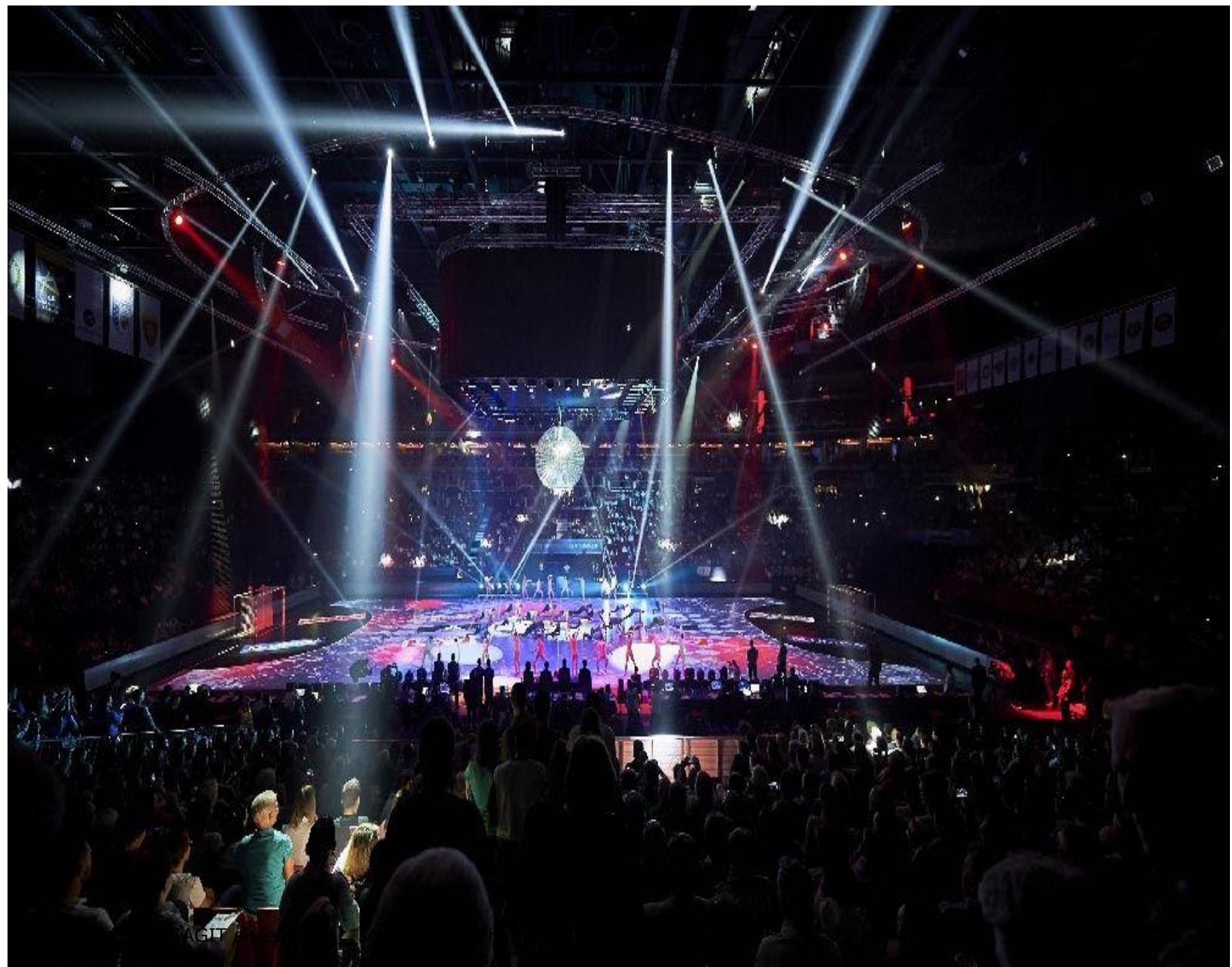
# **OUR SPORT IS GOING TO CHANGE .....**



**...to play handball  
well .....in not  
enough any more**

# NEW „TECHNOLOGIES IN ORGANIZATIONS PART







EHF Competence Academy & Network



# TECHNOLOGY IN MENTAL PREPARATION





# **FOR COUCHES ...BESIDES THE TEHNOLOGIES ....**



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# THANK YOU FOR YOUR ATTENTION



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