

**Leadership, Education,  
Certification, Cooperation**



**The American Swimming  
Coaches Association**

# ASCA

- A MAIOR ASSOCIAÇÃO MUNDIAL DE TREINADORES DE NATAÇÃO
- TEM 11.580 ASSOCIADOS
- SENDO 4.100 INTERNACIONAIS.
- SEDIADA EM FORT LAUDARDALE, FLORIDA.
- EXISTE DESDE 1959
- INICIOU CERTIFICAÇÕES EM 1985,
- E JÁ DEU MAIS DE 21.000 DIPLOMAS.
- CERTIFICOU INTERNACIONALMENTE MAIS DE 1.300 TREINADORES
- DE 110 PAÍSES,
- ATUALMENTE 14 PAÍSES FAZEM CURSOS DA ASCA
- NO BRASIL ESS É 5 º ANO DE PARCERIA COM A ASCA
- SOBRE A ESTRUTURA DA ASCA NOS EUA :
- O PRESIDENTE É SEMPRE UM TREINADOR RENOMADO COMO:

# OS PRESIDENTES DA ASCA

- **DOC COUSILMAN**
- **DON GAMBRIL**
- **JACK NELSON**
- **GEORGE HAINES**
- **PETER DALAND**
- **RICHARD QUICK**
- **DICK SHOULBERG**
- **GREG TROY**
- **DON HEIDARY** (ATUAL-ORINDA AQUATICS-CA)

# FALANDO DA NOSSA 5ª CLÍNICA DA ASCA NO BRASIL

Vamos ter **nível 1** comigo  
**4ªf** amanhã aqui na FARJ.

O **nível 2** será **5ª f.** comigo  
no Mar Palace Hotel em  
Copacabana e lá também  
os **níveis 3 a 5** de sexta a  
**domingo** com o coach  
Asca 5 **MAVIAEL**

**SAMPAIO**





# MAVIAEL SAMPAIO

- Coach ASCA 5- residente **nos EUA há 18 anos**
- Formado em Educação Física, com **Mestrado em Cinesiologia pela University of North Dakota**, EUA.
- Como treinador chefe (Head Coach), trabalhou no Yara Clube de Marília (Marília, SP), USIPA (Ipatinga, MG), **C.R.Flamengo (Rio)**, **Universidade de Dakota do Norte (EUA)**, Etown Dolphins Swim Team (EUA), Elizabethtown High School Swim Team (EUA) e Swimchester Sailfish Swim Team (EUA).
- **Primeiro treinador sul americano a se tornar Head Coach de uma Universidade nos EUA, Maviasel também foi o primeiro a atingir o nível 5 da ASCA, e a ser eleito NCAA "Coach of the Year" em qualquer uma das divisões da natação universitária americana.**
- No Brasil, **foi treinador** da seleção brasileira absoluta **no Pan de 1999 em Winnipeg-Canadá, nos Mundiais de 1998 (Hong Kong) e 2000 (Atenas). nos Sul americanos de 1998 (San Felipe, Venezuela) e 2000 (Mar del Plata, Argentina) e na Copa do Mundo: 1998, 1999, 2000 (Rio).**
- Tendo seus atletas conquistado vários títulos nacionais e internacionais, além de terem batido recordes nacionais e continentais absolutos.
- **Nos EUA, durante os anos à frente da Universidade de Dakota do Norte, teve 32 nadadores se colocando entre os 8 melhores no Campeonato Universitário Americano de segunda divisão, tendo seus atletas batido 6 recordes nacionais, e obtido 32 títulos de Campeões Universitários Americanos.**
- **Como nadador** participou pela seleção Brasileira em Campeonatos Sul Americanos (Campeão absoluto), **Mundiais Universitários (décimo colocado)**, e Jogos **Pan Americanos (quinto colocado)**, sempre em provas do nado de peito.
- Como nadador Master, foi campeão mundial em 1989 e 1990.
- Casado com Ana Lúcia, reside em Winchester, Kentucky, tem duas filhas: Manuela (22 anos, nadadora e estudante da Universidade de Louisville), e Mariana (20 anos, estudante de Música em Los Angeles, Califórnia).

**AGORA VAMOS  
FALAR DA  
DA 50<sup>a</sup> CLÍNICA  
MUNDIAL DA ASCA  
O MAIOR EVENTO  
DO GÊNERO NO  
MUNDO**

**EM ANAHEIM- CA, EUA**

**3 A 9 DE SETEMBRO DE 2018**

- ESSE ANO FOI DE 3 A 9 SETEMBRO A 50ª ASCA WORLD .
- É A MAIOR CLÍNICA MUNDIAL DE TREINADORES DE NATAÇÃO COM 1200 INSCRITOS DE 49 PAISES.
- O RECORDE FOI EM INDIANAPOLIS 2010 C/ 1826 INSC.
- UM EVENTO QUE ACONTECE DESDE 1969 ,HÁ 50 ANOS.
- SÃO 60 PALESTRAS E ENCONTROS DIVIDIDOS EM 7 EIXOS:
- FAIXA ETARIA/GESTÃO/UNIVERSITÁRIO/COLEGIAL/ MASTERS/ SENIORS E ESCOLA ASCA\* ONDE:
- \* CERTIFICAM-SE TREINADORES NOS NIVEIS ASCA 1 A 5
- HÁ 1 FEIRA DE EQUIPAMENTOS E SERVIÇOS DE 3 DIAS ONDE EXPOEM CERCA DE 50 FORNECEDORES :
- A ASCA COMEÇA NUMA 3ª F. E TERMINA DOMINGO.
- CADA DIA TEM EM MÉDIA TEM 12 h DE ATIVIDADES.
- HÁ UMA FESTA DE ABERTURA E UM JANTAR DE GALA ONDE SÃO PREMIADOS E RECONHECIDOS OS MAIORES TREINADORES DOS EUA.

# Em 2018 O BRASIL TEVE APENAS 10 ABNEGADOS REPRESENTANTES:

GILBERTO JUNIOR

MARIO SOBRINHO

ROBERTO STRAUSS

WLAD VEIGA

EMANUELLE SARKIS

FERNANDO MARCOS SORAGGI

FERNANDO SORAGGI

ANA GABRIELA SORAGGI MATHEWS

DJAN MADRUGA

HALLER FREITAS

**Foto de parte dos brasileiros aqui na ASCA, da esquerda: Djan Madruga, Gilberto Junior, Emanuelle Sarkis, Fernando Marcos Soraggi, Fernando Soraggi e Ana Gabriela Soraggi Matthews.**







MP<sup>TM</sup>  
MICHAEL PHELPS  
DESIGNED BY

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  - Shopping Cart
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**Swim**  
**SI**

**SLO**





**SEMPRE ESTRELAS DA NATAÇÃO - ENTRE ANTHONY ERVIN E JOSH DAVIS** dois campeões olímpicos Ervin (2x a última nos 50L do Rio) e Josh Davis (3x nos revezamentos em Atlanta).





Com o britânico **JAMES GUY**,  
tricampeão mundial em Kazan e 2X  
vice-olímpico de revezamento





# GALA DINNER





# GALA DINNER



# COUNSILMAN CREATIVE CONTEST





# ***“This Really Works”***

## **POSTER PRESENTATIONS**

Be an ASCA World Clinic presenter! Share your creative ideas that “Really Work” Win some big money too! Judging based upon originality, creativity, simplicity, motivation, and FUN for kids to do and coaches to watch.

### **The Order of Events**

- |                      |   |
|----------------------|---|
| <b>1. Illustrate</b> | <b>11 x 17 paper at booth</b>                               |
| <b>2. Name it!</b>   | <b>Include: name, club and cell phone number)</b>           |
| <b>3. Post it!</b>   | <b>Exhibit Hall – DEADLINE THURSDAY 3:00 PM</b>             |
| <b>4. Get 'em</b>    | <b>Get ideas Take phone photos or write 'em down</b>        |
| <b>5. Judging</b>    | <b>Thursday 4:00 - Finalists notified by phone</b>          |
| <b>6. Awards</b>     | <b>Finalists MUST attend Award Banquet to receive prize</b> |
| <b>7. Spend it!</b>  | <b>Win, place or show</b>                                   |
| <b>8. Read it!</b>   | <b>ASCA Newsletter!</b>                                     |

**1<sup>st</sup> Place - \$400**

**2<sup>nd</sup> Place - \$300**

**3<sup>rd</sup> Place - \$200**

**4<sup>th</sup> Place - \$100**

Prize money donated by the Counsilman Lecture Series.



# DISTANCE SETS

## Distance Set:

10x 50 :45 hold 500 pace  
5x 100 1:30 hold 500 pace  
2x 250 3:45 hold 500 pace  
1x 500 for time

1:00 rest

8x 50 KICK 100 Variable Sprint

25 HARD / 25 EZ

25 EZ / 25 HARD

50 EZ

50 All out

3x 500 7:00 for Average time  
as fast as or faster than 500  
above

Bonnie Dickman  
South Shore, MA  
617-661-7942

## MULTIPLE ROUNDS

5x 150 / 2 - 1:20-1:5

1x 200 / 2 - make the interval

KK set

15x 200 / choose your interval

KK set

5x 200 / 3:15 4:20 / 3:05 3:00 / 2:55

2x 200 / 3:05 1x 300 break 2:35

pull set - same formula as above

drop tail buoy on last 50 of each repeat and

ADD an kick like you really mean it

Don't

Coach: Clay Pruitt, Katy Aquatics, 832-348-0577

40 x 25's @ :30

#1-3: Breathe Every 4th

#4: FAST Fly

D - 20 Deep Squats

E - Eighty (80) Flutter Kicks

A - All Out! 100 Free

T - Ten (10) Push-ups

H - Hundred All Out Kick

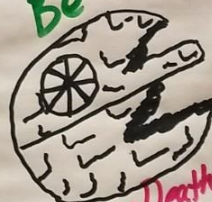
S - Sprint 50 Fly

T - Thirty (30) Streamline Hops

A - Airless 2x25's Breath Control

R - Really Fast 100 IM

May The 4th  
Be With You!



How Many Death Stars  
Can You Destroy?

- 1- Padawan
- 2- Apprentice
- 3- Jedi
- 4- Sith
- 5- Vader

Try Not!  
Do Or Do Not  
There Is No Try  
- Yoda

## GAMES

## PRINT SETS

## Using Long belt stretchcord

Long belt stretchcord.  
Kickboard, Fins are optional  
Blocks  
Repeat 3 to 8 x (depend on time available)  
10 Sprint Kick on :10-15 Rest  
w/ stretchcord  
Make to the wall or :20 Sprint swim  
on :10 to :15 rest  
w/ stretchcord  
25 or 50 From the block for time  
(NO equipment)

## BENEFITS

- Water - Change the Normal pract. routine
- Athlete - challenge athletes by trying to make it to the wall
- 1 - Allow swimmers to just go Fast
- 1-5 min. - Coaches can observe & have time to communicate w/ swimmer on technique
- Free - ODD: Free / Even: Best Non Free
- 1 min. - I M Order.

## PULLING



**NESSE JANTAR A ASCA ANUNCIA  
OS TREINADORES AMERICANOS DO ANO.  
JÁ CONQUISTARAM ESSA HONRA:**

- **Doc Counsilman** (1º em 1961),
- Peter **Daland** (1), Don **Gambril** (1)  
**Jim Montrella** (2), **Randy Reese** (2), Greg  
**Troy** (2), Bruce **Gemmell** (2)  
**Dick Shoulberg** (2), John **Urbanek** (2),  
Richard **Quick** (4), George **Haines** (4),  
**Mark Schubert** (5), **Eddie Reese** (5),  
**Bob Bowman** (5) e **Dave Durden** (1) e **RAY  
LOOZE** (1) em 2017.

# 1º ANUNCIAM O AGE GROUP COACH OF THE YEAR

## PAST WINNERS



2014 – Beth Winkowski, Dynamo



2015 – Tom Himes, NBAC



2016 – Sherwood Watts, Sarasota Sharks



2017 – Rob Norman, TAC

In 2014 the American Swimming Coaches Association (ASCA) partnered with the Fitter and Faster Swim Tour to create an award that recognizes the top Age Group Swim Coaches in the United States. Thanks to the support of Fitter and Faster Swim Tour the Age Group Coach of the Year Award is now a significant award which recognizes the highest achievements of age group coaches.



## 2018 NOMINEES

Our nominees this year include 54 awesome age group coaches, all placing one or more swimmers in the top 20 of the USA Swimming's national age group rankings for 9 & 10's, 11 & 12's and 13-14. We evaluated the number of #1 Rankings, number of different individuals, and number of points earned by each athlete in selecting these nominees.

Chris Barber, Sandpipers of Nevada  
Ben Bartell, Schroeder YMCA Swim Team  
Christie Batchelor, Bluefish Swim Club  
Geoff Brown, NOVA of Virginia Aquatics, Inc.  
Kyle Bubolz, Chicago Wolfpack Aquatic Club  
Sue Chen, Nation's Capital Swim Club  
Chris Coghill, Austin Swim Club  
Greg Connell, Pleasanton Seahawks  
Tommy Cunningham, Seattle Metropolitan Aquatic Club  
Phil Davies, Schroeder YMCA Swim Team  
Mark Dell, Mecklenburg Swimming Association  
Carleanne Fierro, Westchester Aquatic Club  
Leah Foreman-Kieser, Aquajets Swim Team  
Terry Fritch, SwimMAC Carolina  
Nick Graves, Dynamo Swim Club  
Tim Hable, Great Lakes Sailfish Swimming  
Alec Haley, Fishers Area Swimming Tigers  
Rod Hansen, Irvine Novaquatics  
Tom Himes, North Baltimore Aquatic Club  
Nancy Hooper, Fox Valley Park District Riptides  
Megan Hyllton, Rocklin Mavericks  
Jim Johnson, Brea Aquatics  
Andi Kawamoto-Klatt, Irvine Novaquatics  
Roger Kehrt, Bluegrass Marlins Swim Team  
Brett Kelley, University of Denver Hilltoppers  
Colin Kennedy, Cypress Fairbanks Swim Club  
Mac Kennedy, Swim Florida

Lindsay Kenney, Texas Ford Aquatics  
Ira Klein, Sarasota Tsunami Swim Team  
Kate Lundsten, Aquajets Swim Team  
Daniel McCord, Nitro Swimming  
Kathy McKee, SwimMAC Carolina  
Rick Mills, Magnolia Aquatic Club  
Jarrod Murphy, The Woodlands Swim Team  
Kent Nicholson, Sooner Swim Club  
Robert Norman, TAC Titans  
Ginny Nussbaum, Long Island Aquatic Club  
Megan Oesting, Eastern Iowa Swim Federation  
Chris Pfaff, Camel Swim Club  
Luba Pohlenco, Santa Clara Swim Club  
Alex Rayle, Piedmont Family YMCA/CYAC  
Lori Reigler, Somerset Hills YMCA  
Lucas Salles-Cunha, Quicksilver Swimming  
Stephen Shilling, Santa Clara Swim Club  
Stuart Smith, Texas Ford Aquatics  
Tracy Spurgeon, Alamo Area Aquatics NE  
Errol Stump, Brea Aquatics  
Leslie Tomlinson, Nation's Capital Swim Club  
Sherwood Watts, Sarasota YMCA Sharks  
Liv Weaver, Quicksilver Swimming  
Bryan Welter, Lakeside Aquatic Club  
Beth Winkowski, Dynamo Swim Club  
Norm Wright, Northern KY Clippers Swimming  
Joe Zemaitis, Swim Neptune



# 2018 ASCA

## COACH OF THE YEAR

The ASCA Coach of the Year Award is given annually to the individual whose coaching effectiveness has contributed the most towards American Swimming Excellence at the World Level.

The Award recipient is elected by the ASCA Board of Directors. Nominees are submitted by a three person committee appointed by the ASCA President at the previous year's World Clinic Board Meeting and chaired by the ASCA Vice-President. Nominees shall be ASCA Members at the time of the presentation of the Award.




**COACH  
RAY LOOZE**

### Past Award Winners:

1961 Doc Counsilman	1990 Jon Urbanchek
1962 Peter Daland	1991 Eddie Reese
1963 Dick Smith	1992 Richard Quick
1964 George Haines	1993 Skip Kenney
1965 Don Gambrell	1994 Rick Curl
1966 George Haines	1995 Jon Urbanchek
1967 George Haines	1996 Murray Stephens
1968 Sherm Chavoor	1997 Mark Schubert
1969 Jim Montrella	1998 Richard Quick
1970 Don Watson	1999 Richard Quick & Mark Schubert
1971 Jim Montrella	2000 Peter Banks
1972 George Haines	2001 Bob Bowman
1973 Bob Miller	2002 Teri McKeever
1974 Dick Jochums	2003 Bob Bowman
1975 Mark Schubert	2004 Eddie Reese
1976 Mark Schubert	2005 Eddie Reese
1977 Paul Bergen	2006 Eddie Reese
1978 Paul Bergen	2007 Bob Bowman
1979 Randy Reese	2008 Bob Bowman
1980 Dennis Pursley	2009 Eddie Reese
1981 Mark Schubert	2010 Gregg Troy
1982 Dick Schoulberg	2011 Gregg Troy
1983 John Collins	2012 Bob Bowman
1984 Randy Reese	2013 Bruce Gemmell
1985 Nort Thornton	2014 Bruce Gemmell
1986 Richard Quick	2015 Bruce Gemmell
1987 Bud McAllister	2016 Dave Durden
1988 Bud McAllister	2017 Ray Looze
1989 Dick Schoulberg	



# MARK SCHUBERT

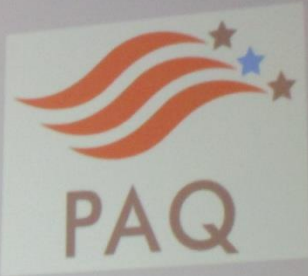


**Coach Mark Schubert**  
Mission Viejo Nadadores

**Coach Kathleen K Prindle**  
Performance Aquatics Swim Club

[SchubertSwim@aol.com](mailto:SchubertSwim@aol.com)  
562-243.6262

[Kathleen@PAQSagswim.com](mailto:Kathleen@PAQSagswim.com)  
561.212.7175







**Professional** is not a  
label you give yourself-  
it's a description you  
hope others will apply  
to you.

- David Maister



coaching is Already our  
**profession...**  
**DEMANDING PROFESSIONALISM**  
is **NEXT LEVEL**

Pursue Excellence to  
remain competitive

Proficiency:  
Knowledge base

Professionalism:  
Everything Else!







# Coach Schubert

HS Coach – Cuyahoga Falls HS (Akron, Ohio) – 1<sup>st</sup> love

**Mission Viejo Nadadores, SoCal: one of the largest teams in the nation**

- from 50 to 550 swimmers in 13 years
- (also Mission Viejo HS)
- 43 National Championship teams! 15 USA Olympians! 8 Olympic Champions

Mission Bay, Boca Raton: developed aquatic center (& club) in south Florida

**College – over 20 years**

- University of Texas – 2 NCAA Champs (& 2 runner-ups)
- USC (\*Trojan for life) - 1 NCAA Champs & 5 Olympic Champs
- Golden West College – 4 state championship teams

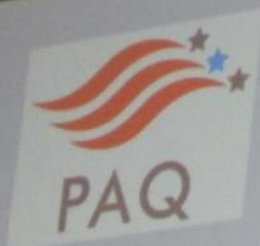
**Mission Viejo Nadadores again: serious as ever, back to high-schoolers**

Since 1980 - Multiple stints leading Team USA (7 OG & 2 WC) 38 swimmers onto US Olympic Teams!

Multiple Halls of Fame



PERFORMANCE AQUATICS



# Coach Prindle

## **Define SUCCESS**

- ✓ What does it look like for you (find your WHY)
- ✓ Find ways to make that happen

## **X's & O's**

- ✓ No substitute. NO way to be credible if you DON'T KNOW
- ✓ Coach Education

## **'Everything Else' can make or break a career**

- ✓ Behavior – treat others well
- ✓ Actions – find a way to contribute. GET INVOLVED!
- ✓ Demeanor/look – you are on stage

## **Are you SERIOUS?**

- ✓ Reputation is all you have. Die with it





swimming = big business?



THE RISE OF "fitness EXPERTS" =

OWNERSHIP OF PERFORMANCE NOW SHIFTS → TO THE EXPERT (vs athlete)

...definition of professional has shifted





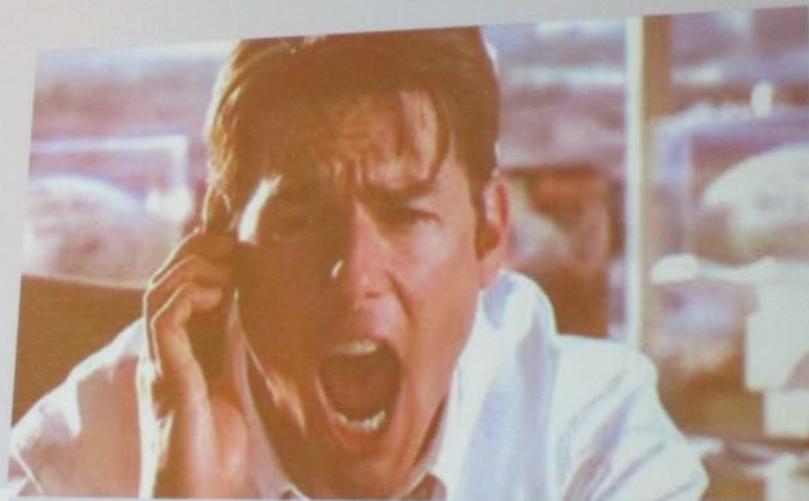
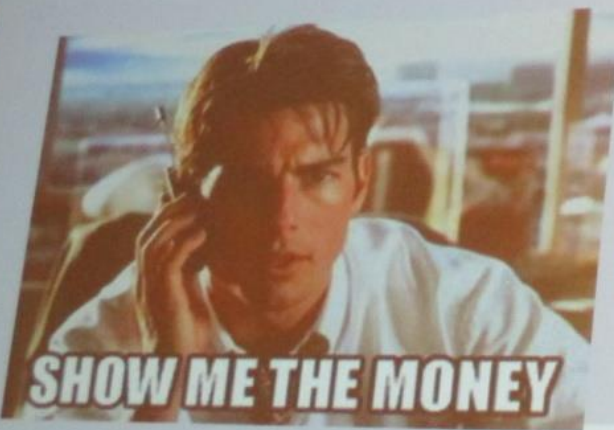
## sports growth

"We used to treat sports like a nice little plaything. Now it is one of the top growth products in the world."

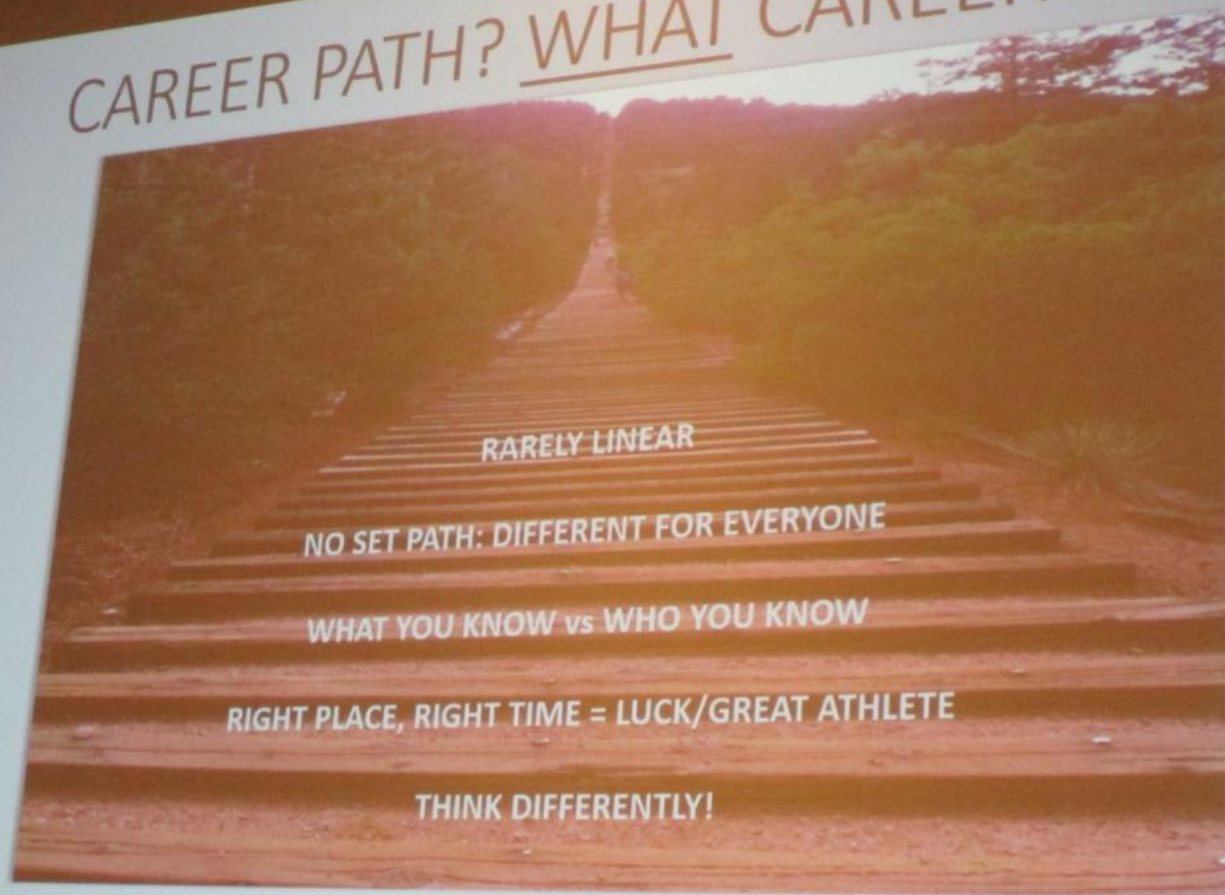
*David Howman, Japan News (Former Director-General, WADA)*

"The sports market in North America was worth \$60.5 billion in 2014. It is expected to reach \$73.5 billion by 2019."

*Darren Heitner, Forbes magazine (lawyer & Founder of South Florida-based firm, Heitner Legal)*



# CAREER PATH? WHAT CAREER PATH?

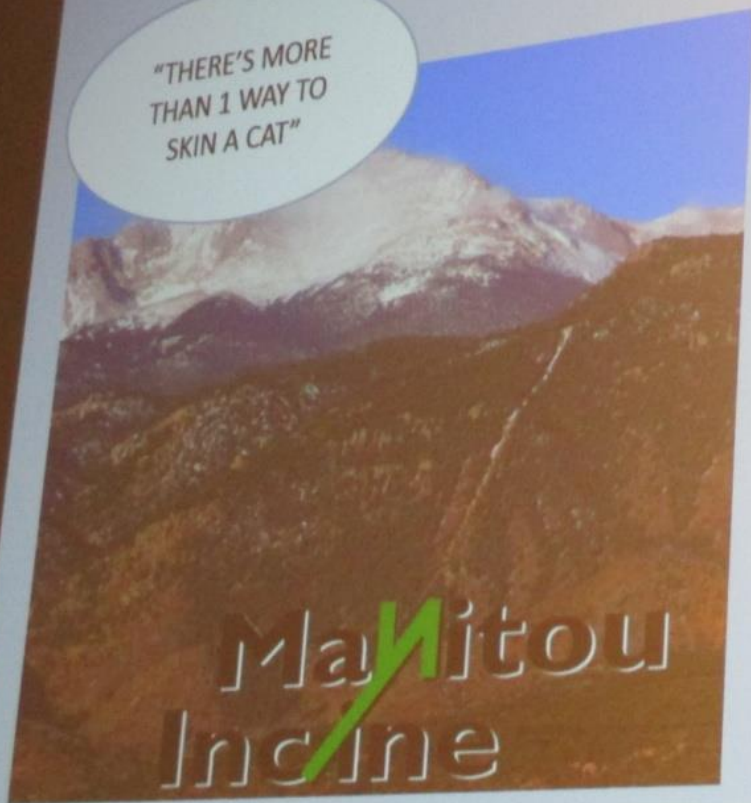


PERFORMANCE AQUATICS

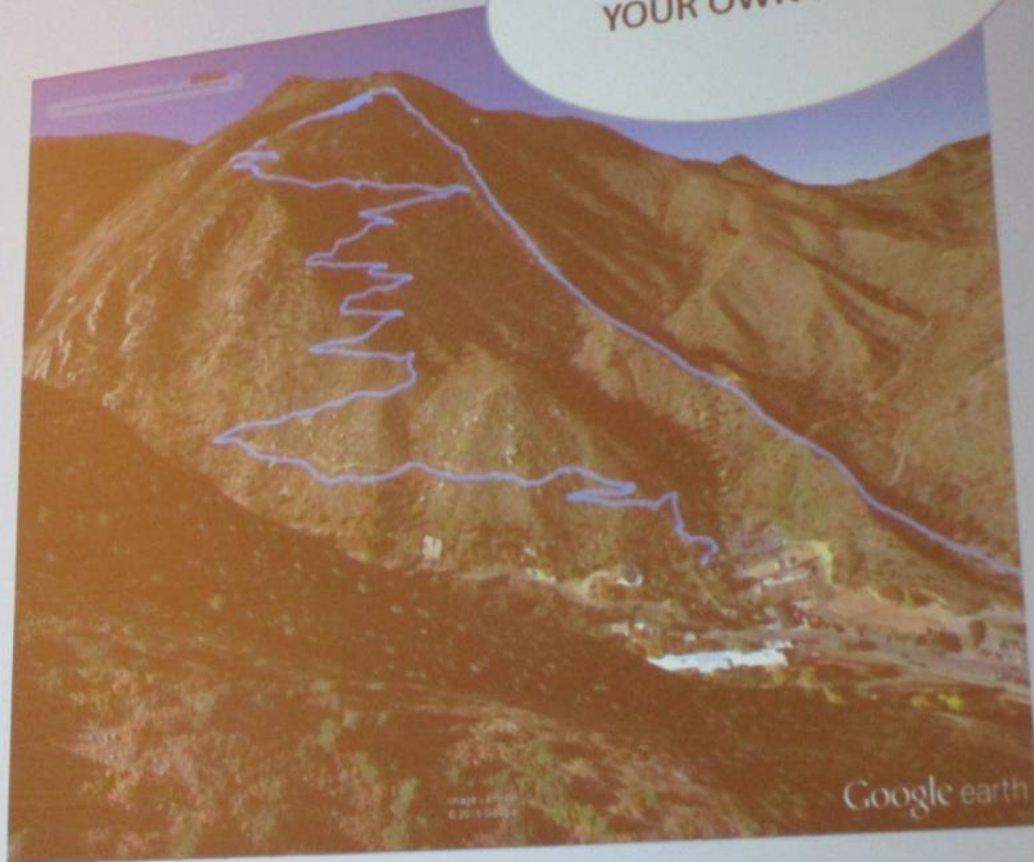


# The wild WILD west

"THERE'S MORE  
THAN 1 WAY TO  
SKIN A CAT"



YOU CAN CHOOSE  
YOUR OWN PATH



Proficiency:  
Knowledge base  
Professionalism:  
Everything Else!

"In every town in the USA, there is an Olympian.  
Unfortunately, there isn't an Olympic Coach.  
Wherever you live, you can develop an Olympian"  
~Pete Lewis (Shoulberg's 1<sup>st</sup> coach)





# Proficiency: Know your sport

- EXPERIENCE = Time on-deck (nothing better!)
- Coach a Range of athletes/skills thru your career
- Become a student of the sport (biomechanics, technique, dryland)
  - Attend Clinics, etc.
  - Online learning
  - Facebook Swim Coaches Group
- Find a Mentor for career advice
  - Visit them, watch them, ask questions
- Build a network of coaching friends
- \*\*Develop your OWN training/coaching philosophy

WATCH. LEARN. LEAD. TEACH





# Professionalism: Everything Else!


## "3 C'S":

- ❑ HOW YOU SPEAK = **COMMUNICATION**
- ❑ HOW YOU ACT = **CONSISTENCY**
- ❑ HOW YOU LOOK/APPEAR = **COMPORTMENT**

It ain't what you do it's the way that you do it — iris apfel, NYC







CONFIDENCE

& COMPETANCE

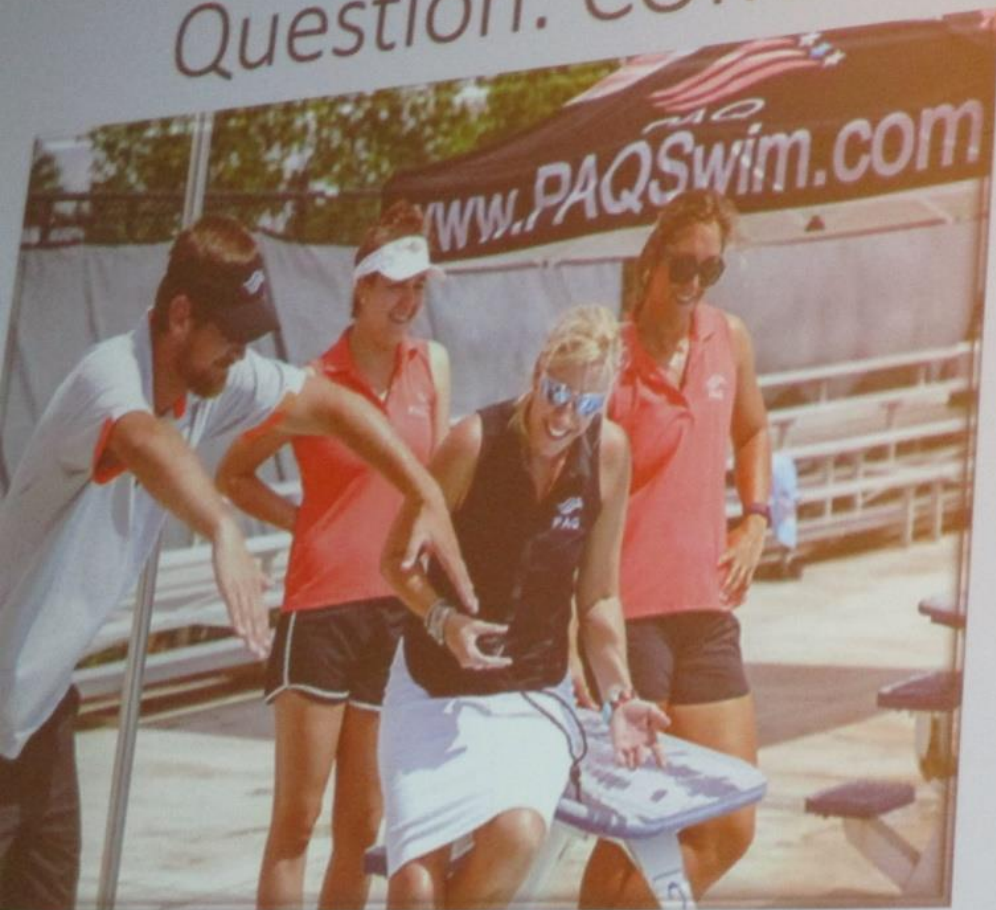


QUESTION: CAN  
THERE IS NO RIGHT WAY TO DO THE WRONG THING

QUESTION. **IS THERE NO RIGHT WAY TO DO THE WRONG THING?**




# Question: COMMUNICATION (Mark)



## "COMMANDER'S INTENT"

- PREPARE YOUR PEOPLE WELL
- COMMUNICATE THE GOAL
- ALLOW THEM TO EXECUTE
- (AND, ENJOY THEM!)



A swimmer in a black suit and blue cap is in a starting crouch on a pool deck. The swimmer is leaning forward with hands on the pool edge, ready to start a race. The background is slightly blurred, showing other swimmers and the pool environment.

Often Overlooked, but Important!

- Never stop asking
- Never stop giving (pay it forward)
- Competition is OK, but
- We are not robots
- Opportunity NOT Opportunist

QUESTION: What about Mentors? (Mark)

PERFORMANCE AQUATICS

# Question: "BALANCE" – Emotional/Mental health (Mark)

**HOW WE HANDLE  
THE JOURNEY  
WILL DETERMINE  
THE DESTINATION.**

**-BILLY COX**



Develop Self-awareness

- Journal, if you have time

Stay Physically Fit

- Adds credibility to your athletes if YOU are an athlete

Eat well

- Enjoy food, eat to stay healthy

Balance?

- Is there such a thing?

Establish Healthy Boundaries

- Work vs. 'Playtime'
- How far will you go to ensure the success of your team?
- Who are YOU married to?

Separate yourself from Performance

- Emotional boundaries – don't obsess!

Know (or get) a community

- Use your friends/network of resources for support
- Religion/Hobbies/Family-kids





## Basic FDD Stats last 16-24 months:

One site visits:	26
Meetings with projects:	75
Air Quality challenges:	111
Equipment assistance:	117
Save a Pool programming:	17
Programming assistance:	389
Plan & Design projects:	156
Renovation assistance:	43
New pool openings:	14

Conference attendees:	325
Pool certifications:	149
Regional Build a Pool conferences:	14
Aquatic Industry Conventions & Clinics:	10
Professional Provider referrals	356
<b>New contacts</b>	<b>793</b>
Drowning tracking	1825 times yr

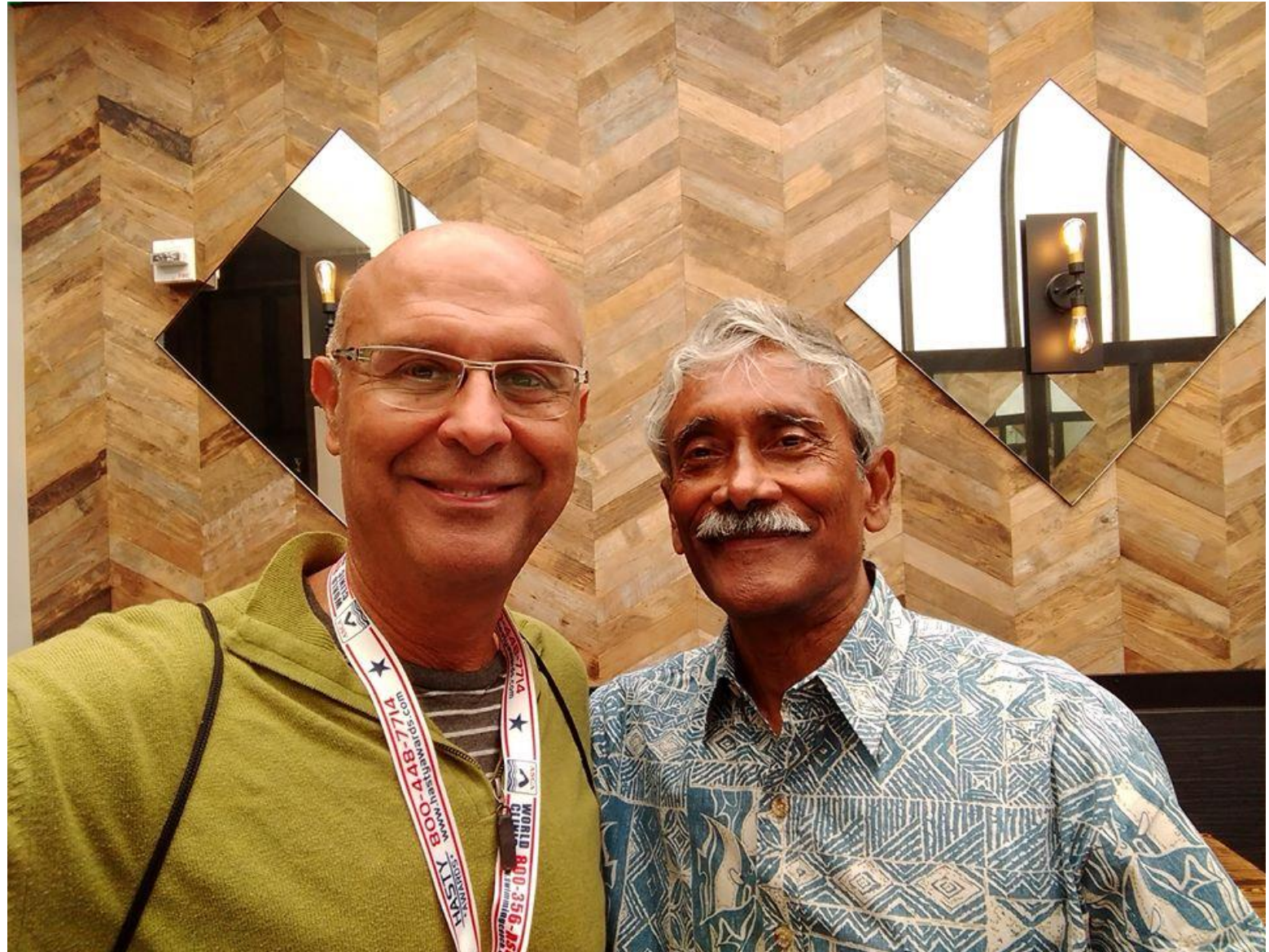
(160 since 2005)



# JAN PRINS









*Worse than simple ignorance, naïve ideas about science lead people to make bad decisions with confidence. And in a world where many high-stakes issues boil down to science, this is clearly a problem.*

*Jason Castro. Scientific American Weekly Review 2012*

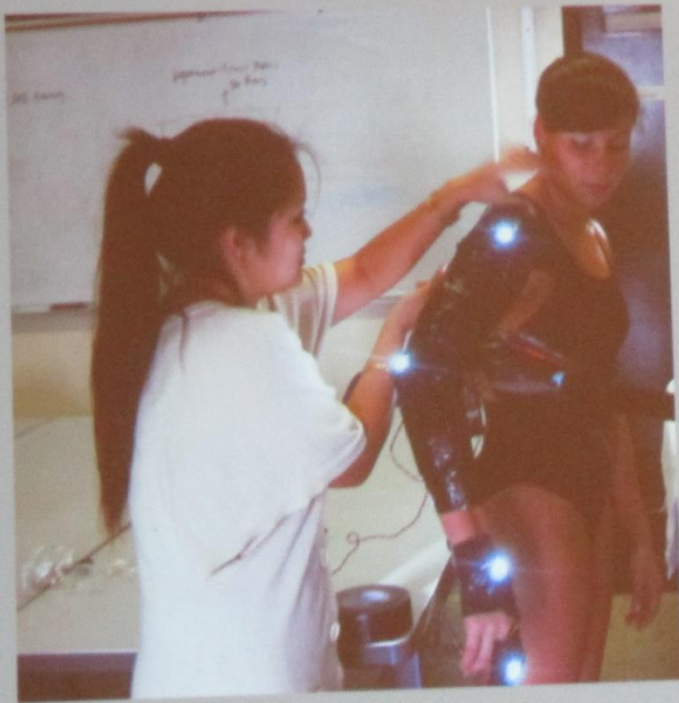


# Today's Lecture

- Impulse & Velocity fluctuations in Backstroke, Breaststroke & Butterfly
- Breakouts – The timing of the first pull and it's consequences
- Flutter Kick vs. Dolphin Kick during breakouts?
- Turns – Selected areas of concern



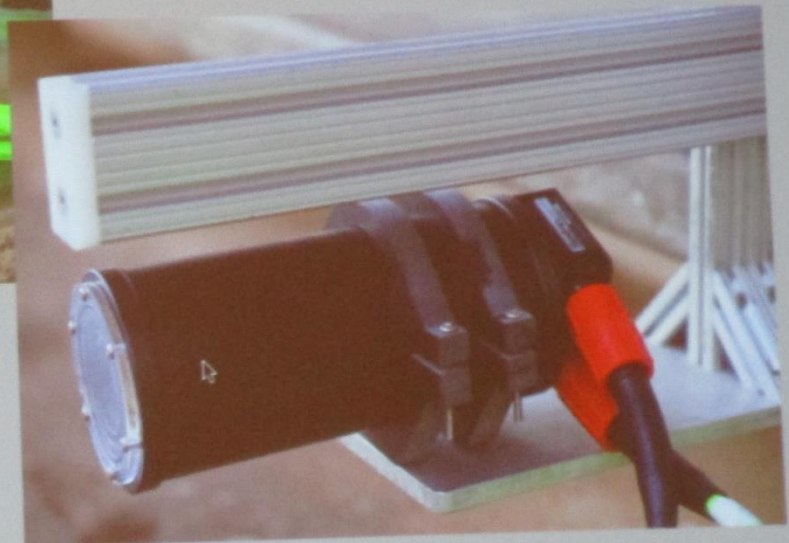
## To identify “limb segments”



Illuminated LED  
markers are  
used ...  
necessary for  
“automatic  
digitization”



# High-Speed Cameras

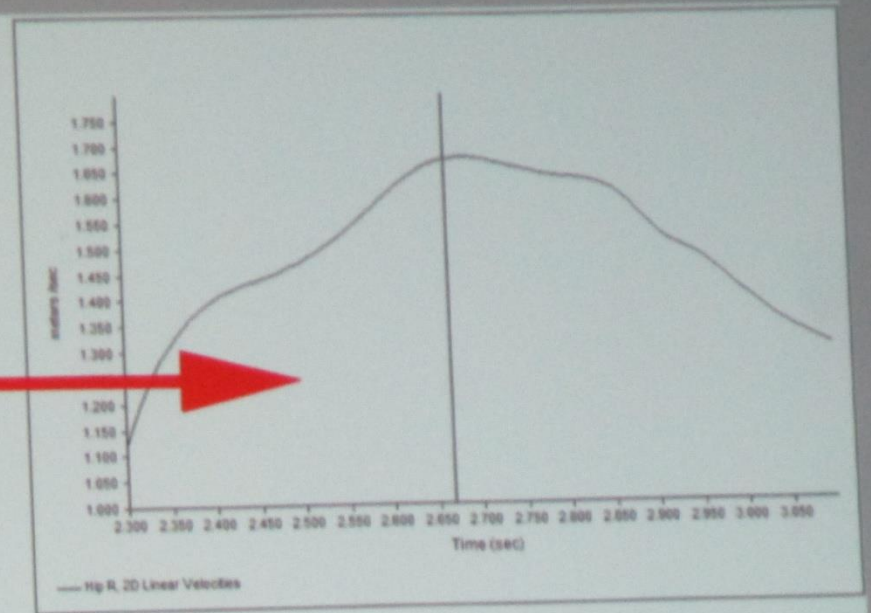
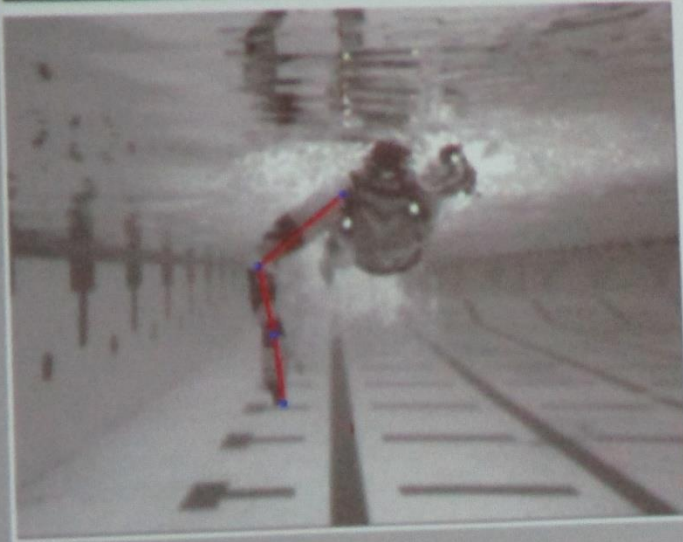




# Motion Capture Software

- Using the software we conduct “Multi-2D” motion analysis
- This allows us to combine video with synchronized graphs to observe and analyze the data





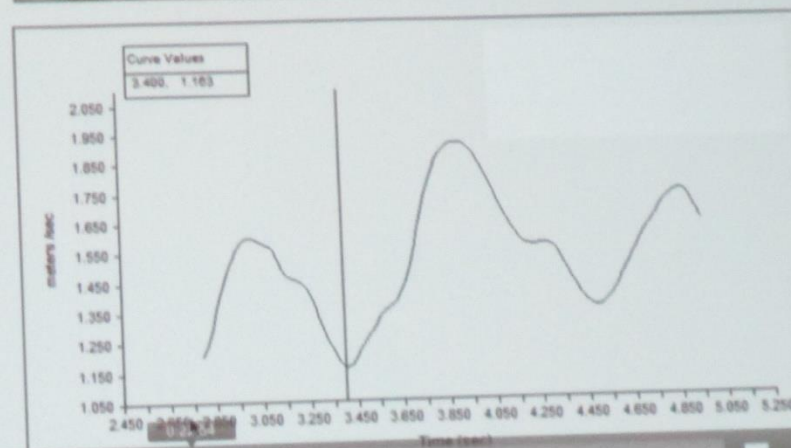
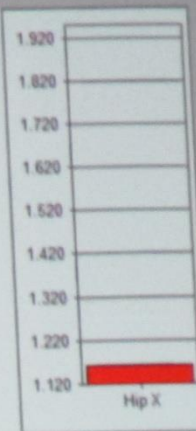
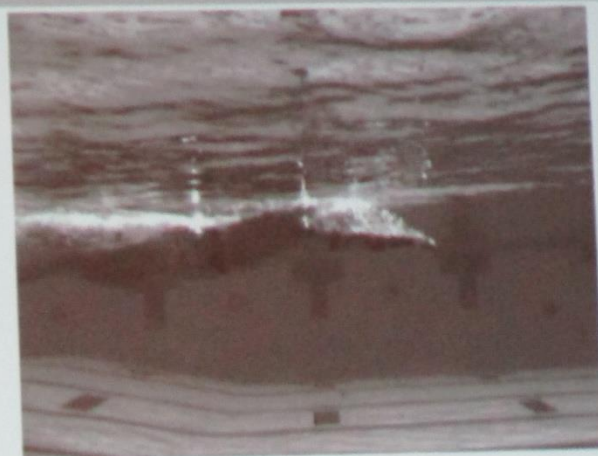
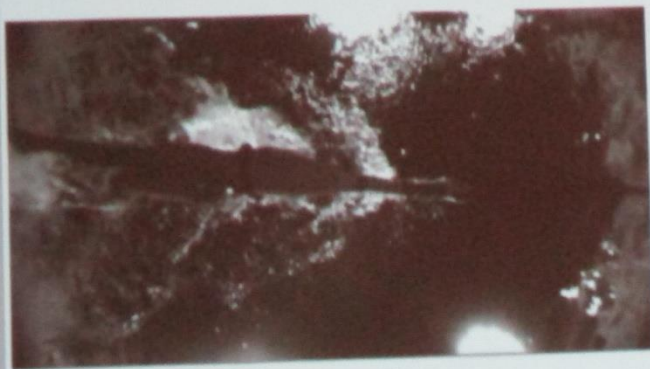
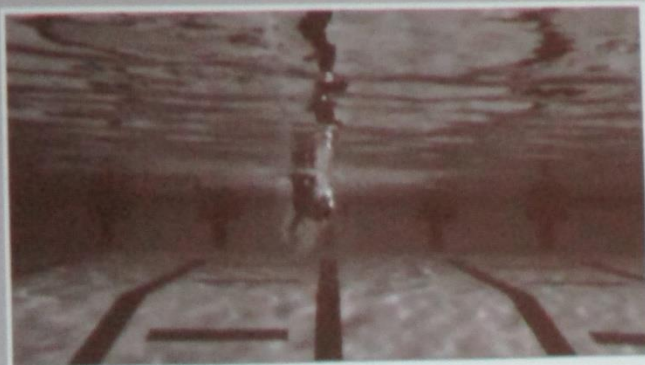
Velocity/Time graph: Moving vertical bar tracks progress



# Primary object of the Report

- Is to show how hip velocity in the longitudinal direction is influenced by all other factors (pull & kick).
- The hip velocity is the final “dependent variable.”





# Impulse = Force x Time

1. Large forces applied for a short time.
2. Relatively moderate to large forces applied for an extended time.



# Reminder

- What the data produces are objective details of the consequences of different variations in stroke technique.

# Backstroke

- Bi-phasic
- Increases in velocity is seen during two phases of the stroke cycle
- However, a single peak is also very common
  - Less efficient?

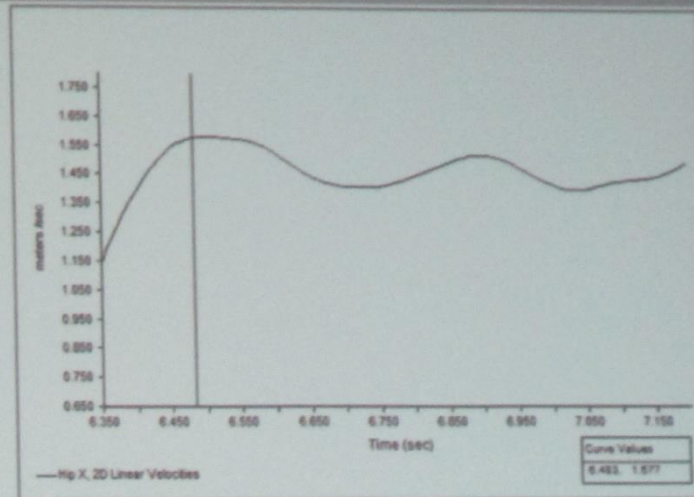


## Hand & Palm Positions

- Regardless of the stroke angle at which the arm is moving, keep the palm of the hand facing directly toward the feet to maximize propulsion.

*Bixler, Barry S. Resistance & propulsion. Handbook of Sports Medicine and Science: Swimming, Second Edition. 2005 Blackwell Science Ltd.*





Approximately 34 to 38% of the duration of the u/w pull maintained at max velocity



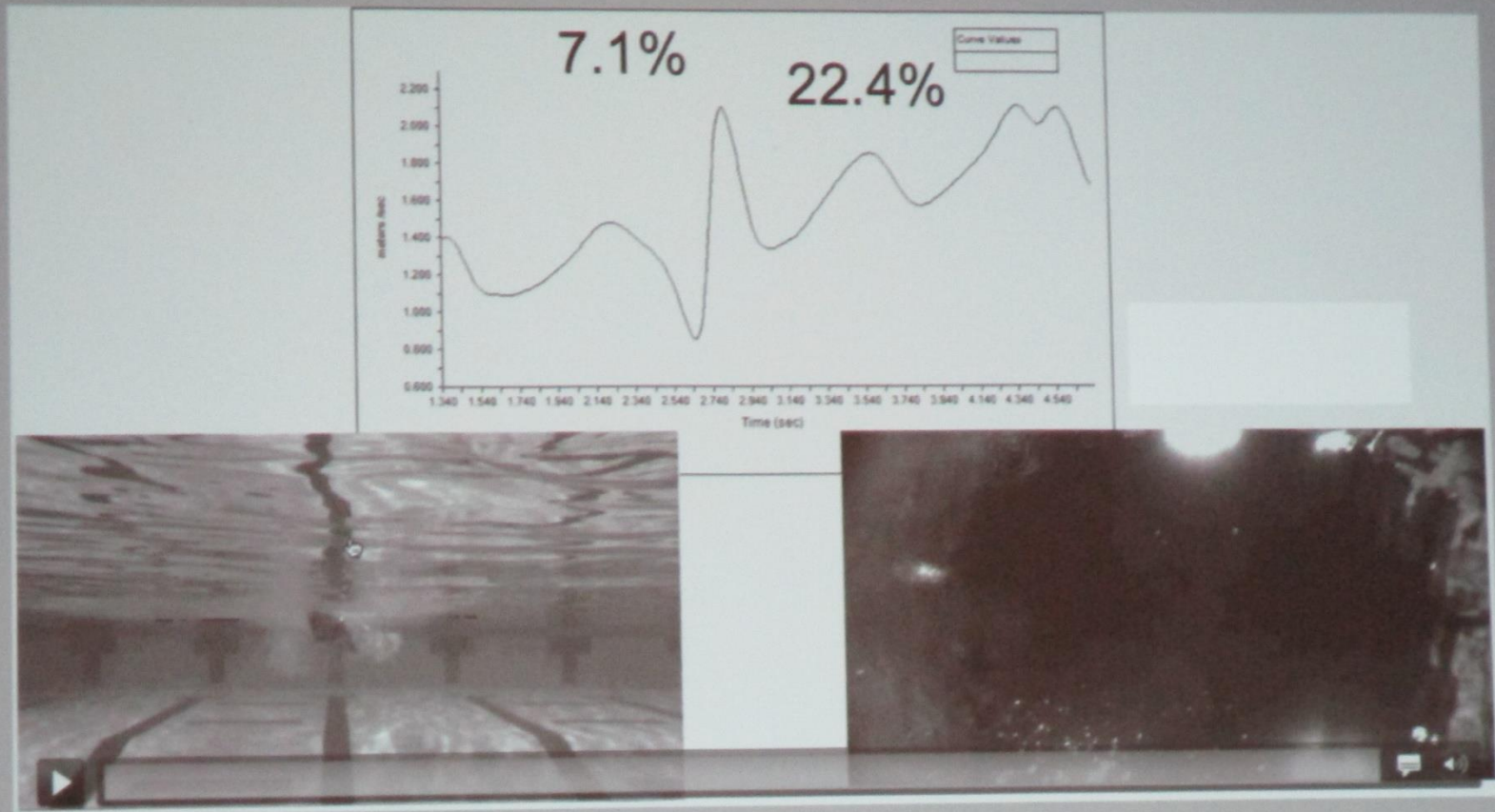
# Average Backstroke's Profile

- Some bi-phasic effect
- Typically: Surges in maximum velocity, most often during the last third of the pull.

We see a reduction in velocity when:

- Elbows are held too straight starting with the “catch.”
- Or elbows are extended too early – hands drifting in towards the hips, generating little propulsion.





Early Elbow Extension: Percent of time each hand spends at peak hip velocity

# Breaststroke

- Bi-phasic
- Two velocity surges
- First phase during the pull
- Second phase during the kick
- Some overlap
- Values depend on relative contributions of the kick and pull



## Four Areas of Focus

1. Relative contribution of Pull vs. Kick
2. Percentage change in velocity during “draw-up” of feet/knees
3. Effect of a later draw-up?
4. Importance of streamlining during glide phase.



# 1. Relative contribution of Pull vs. Kick

- During the “whole stroke” - Velocity generated from the pull is greater than from the kick
- Majority tested showed similar differences
- Contrary to expectations?



## In the “isolated” Breaststroke Pull

- Maximum hip velocity occurs as the “in-sweep” nears completion.

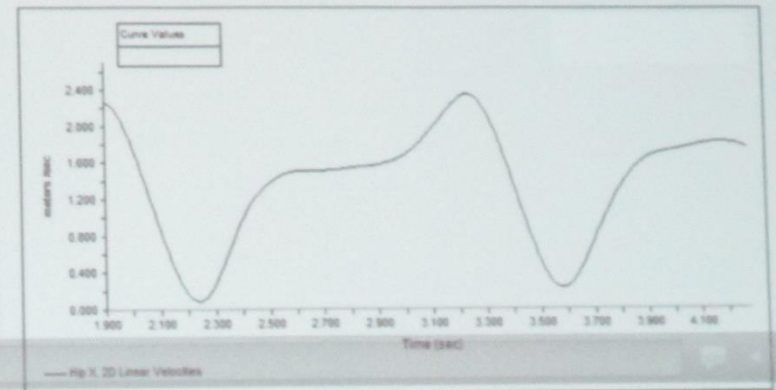
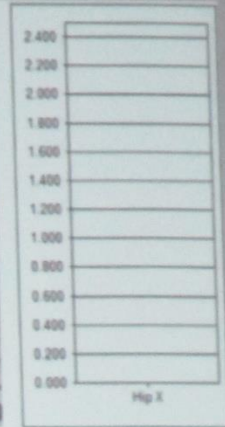
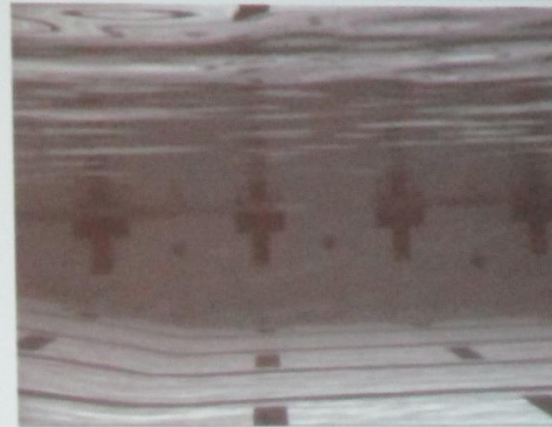
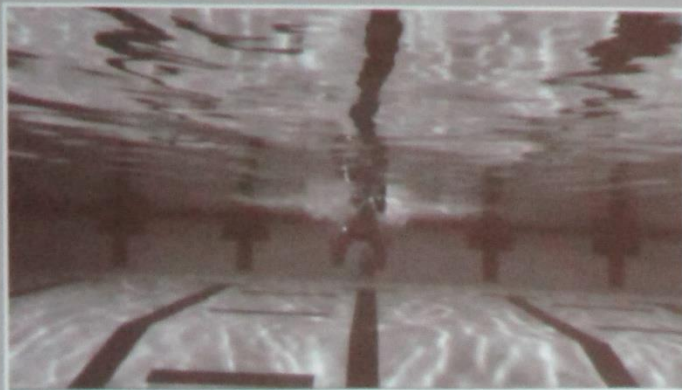
*Possible explanation as to why the pull appears to be more effective than the kick?*

- The drop in velocity being so steep, the succeeding kick is not powerful enough to generate the same or higher overall hip velocity!



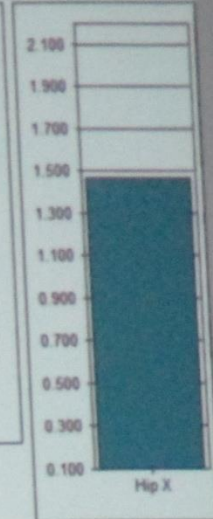
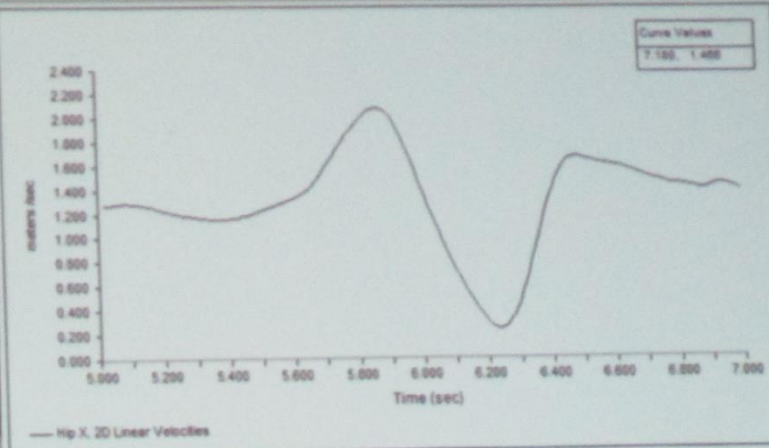
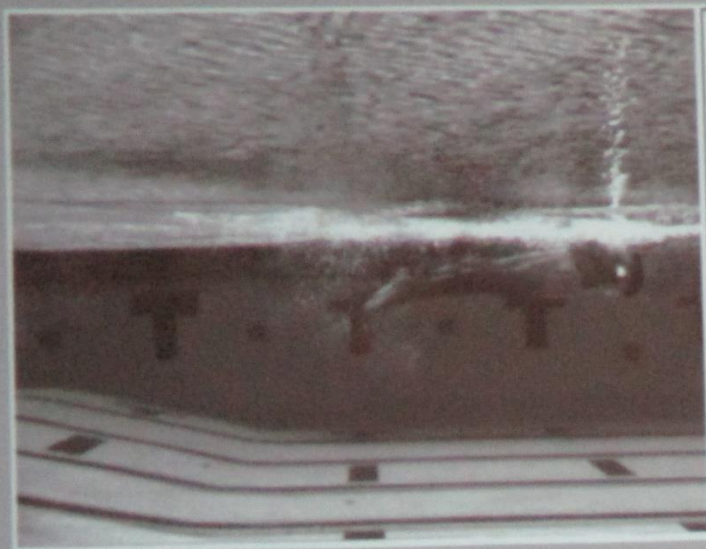
2. Where do we see a drop in the stroke cycle?

- Significant drop off in velocity coincides with the period after the pull when the feet are pulled up



Drop-off in velocity: 90.2%





Drop-off in velocity: 87.9%

*Michael Duderstadt.*

*100 Breaststroke NCAA Div. I Finalist.*



# Breaststroke Velocity Fluctuations

	Pull Peak Velocity	Drop-off Velocity	Percentage Change
Swimmer 1	2.35	0.23	90.2
Duderstadt	2.08	0.24	87.9
Average (14 swimmers tested)	*****	*****	82 to 91%



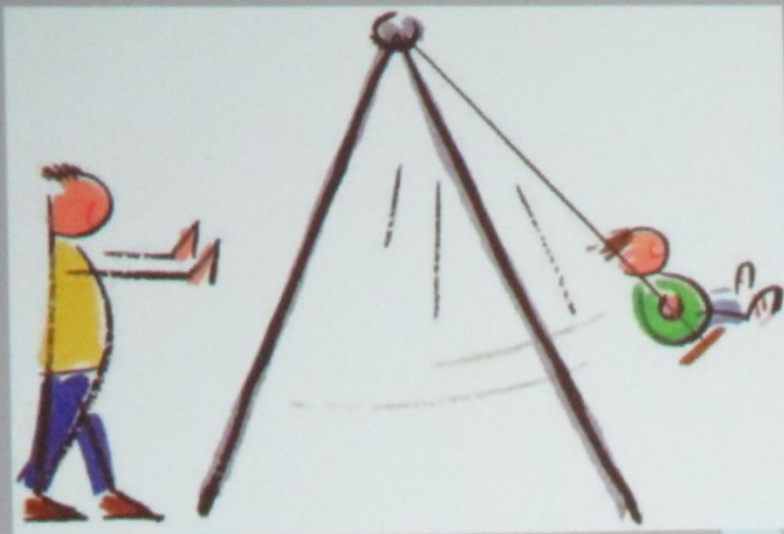
# Breaststroke Velocity Fluctuations

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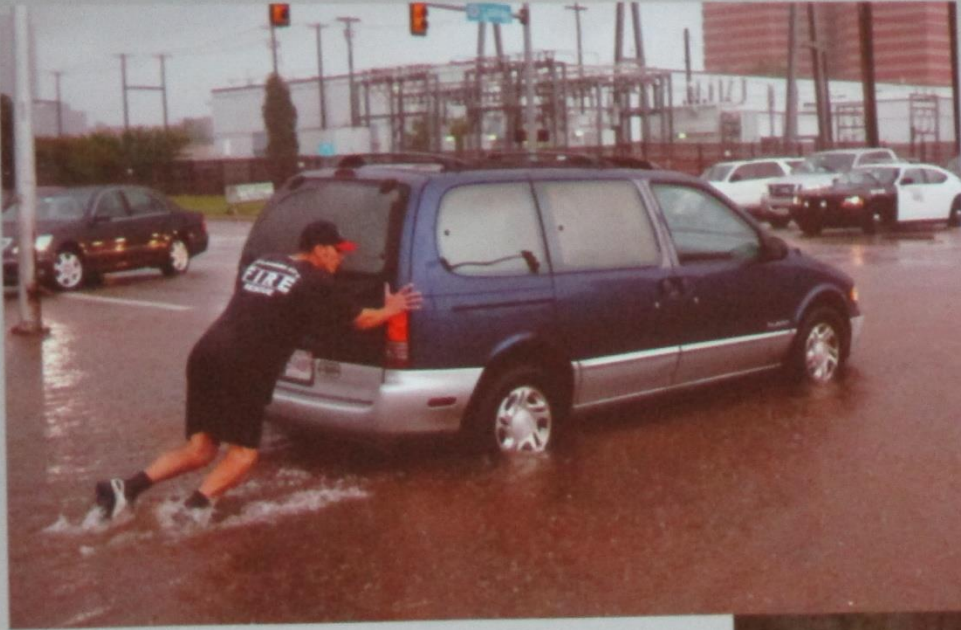
## Biomechanical Implications

- Fluctuations in velocities are directly related to changes in “dynamic inertia”
- Changes from static to dynamic inertia are metabolically more demanding





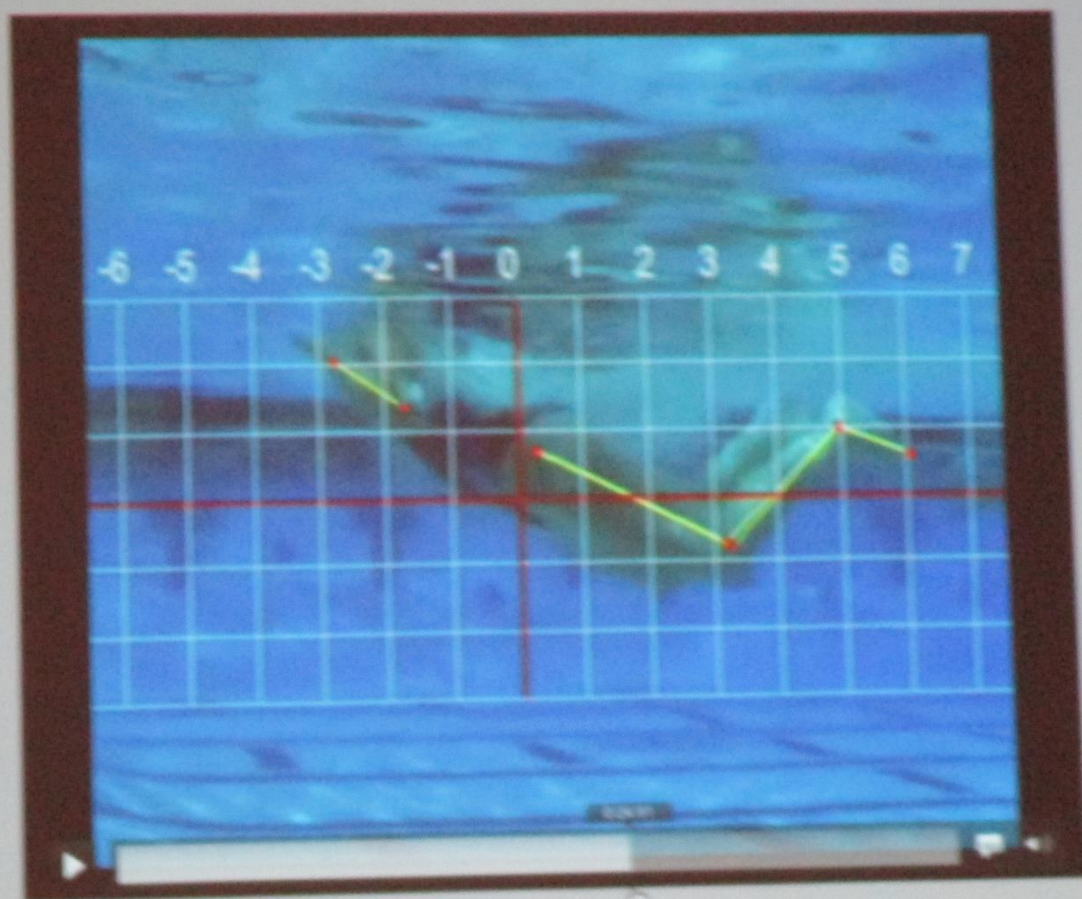






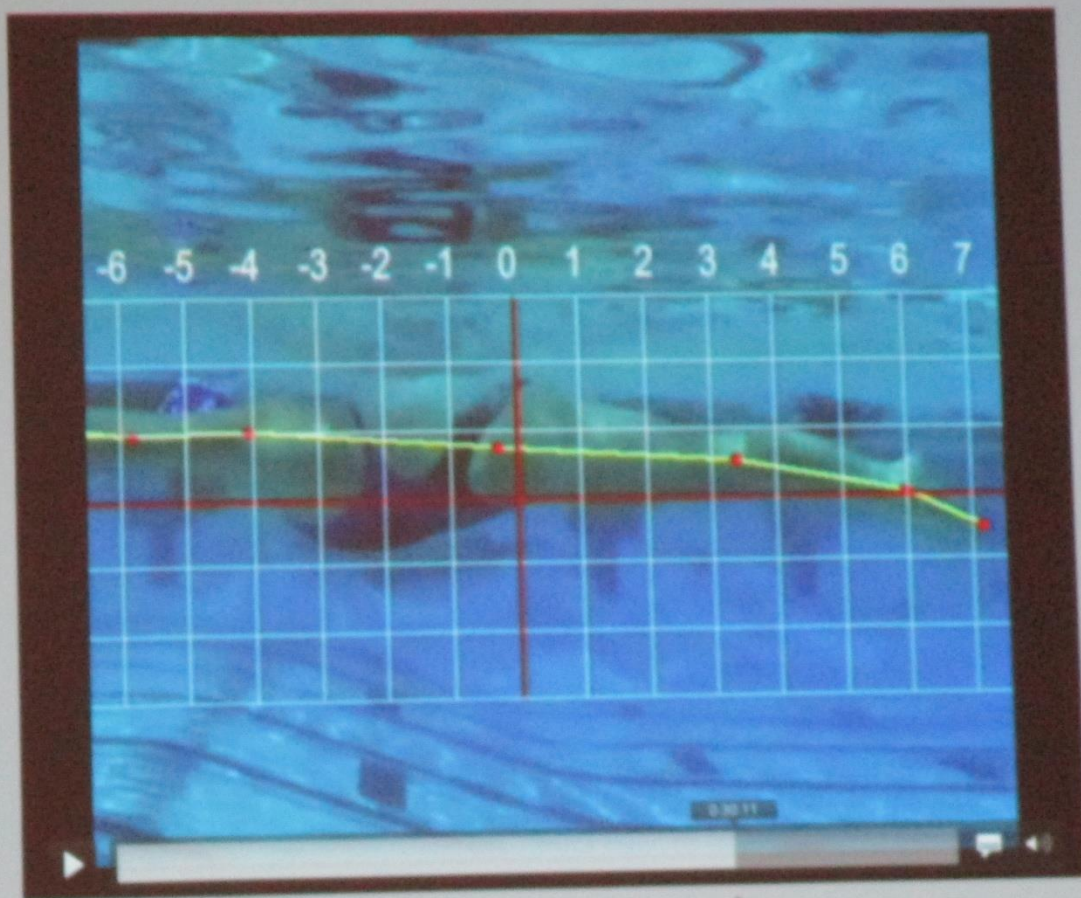
### 3. Glide Phase in the Breaststroke

- The importance of holding a longitudinal “body-line” during the glide phase



*Leisel Jones – Former world record holder, 100m Breaststroke*





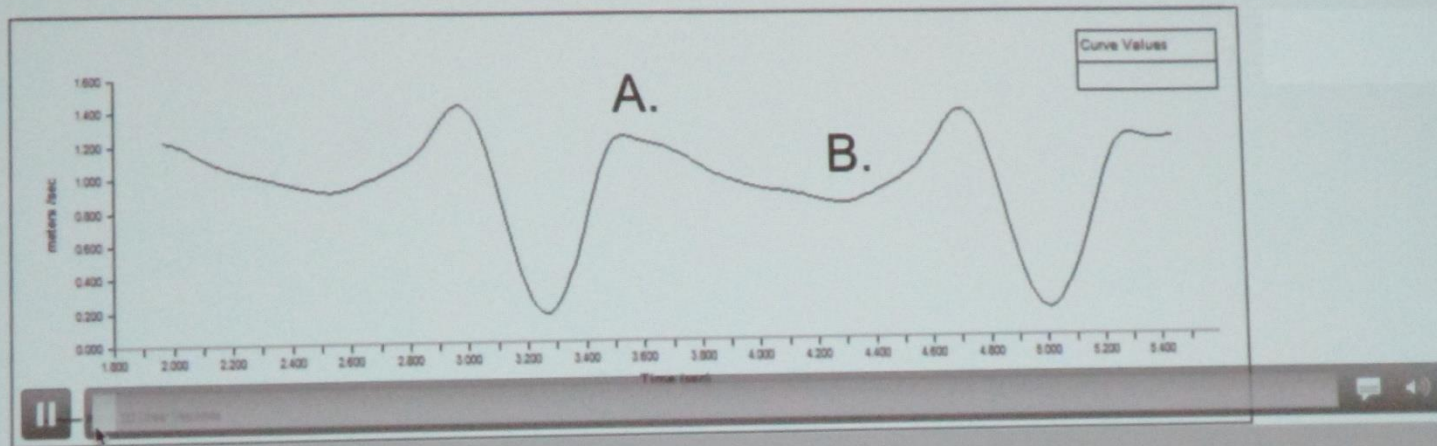
*Leisel Jones – Former world record holder, 100m Breaststroke.*



## Factors affecting Glide Phase

- Holding glide for too long?
- Extending arms at a downward inclination





33% reduction in velocity between A. & B.

## 4. Timing of the Kick in Breaststroke

- Early vs. late “draw-up”
- How late do we wait before starting the kick?



## Possible Advantages of a Late Draw-up

- Hands do not have to wait at end of “insweep” for initial draw-up to begin
- This induces quicker knee flexion and completion of the kick



## Recent Study

### **Kinematic Analysis of Peak Velocities in the Breaststroke as a Function of the Timing of the Kick**

*Susan M. Ward<sup>1</sup>, Jan H. Prins<sup>1</sup>, Bret G. Freemyer<sup>1</sup>*

*<sup>1</sup>Department of Kinesiology and Rehabilitation Science  
Aquatic Biomechanics Research Laboratory*

Will be published in next issue of the  
Journal of Swimming Research.



# Butterfly

- Bi-phasic
- Combination of pull and second kick produce majority of impulse

## Four areas of Focus

1. Peak Velocities in the stroke cycle
2. Can we increase pulling impulse?
3. Examine the extent of the drop in velocity during arm recovery
4. Result of bending knees on the “upbeat” of the dolphin kick
5. Subtle but critical example of a stroke defect in Butterfly



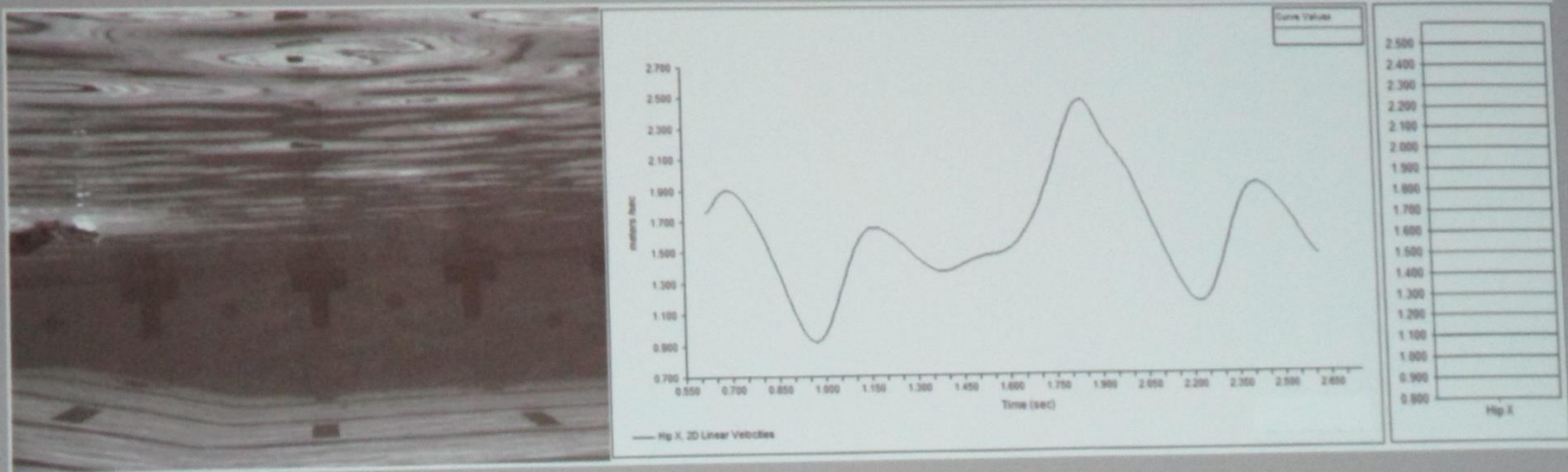
# 1. When do we see peak velocities during the Butterfly?

As expected:

- The primary peak velocity occurs in the second half of the pull, as the pull nears final elbow extension.
- The second, occurs during the second kick



# Typical Butterfly Velocity Profile



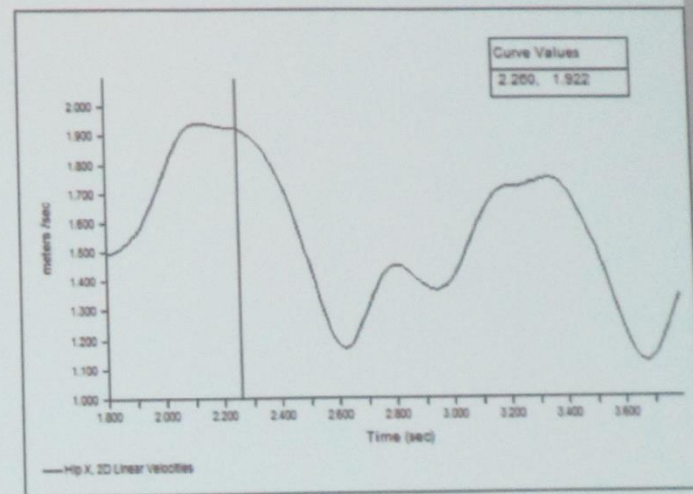
*Michael Weiss: 400 IM record holder – World Univ. Games.  
USA 800 Free Relay – 2015 World Championships*



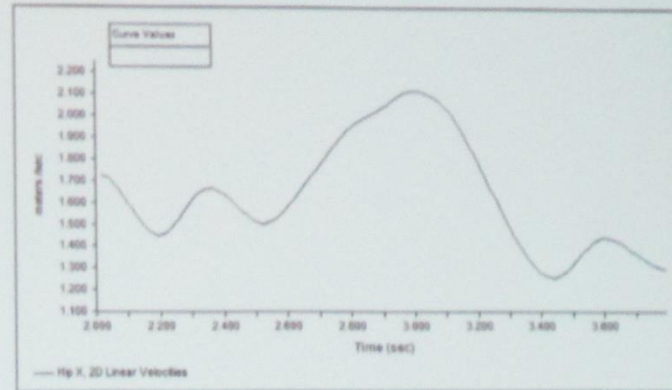
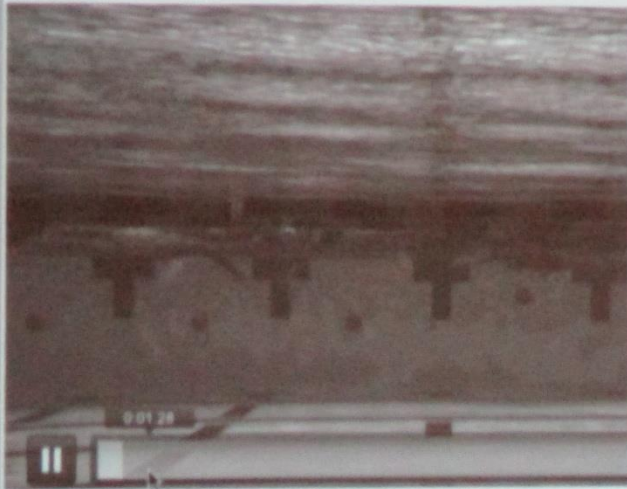
## 2. Can impulse in the Butterfly be improved?

- Can we apply more emphasis on feeling pressure on the hands earlier during the pull?
- Focus on “controlled acceleration” i.e. Avoid pushing back too fast.



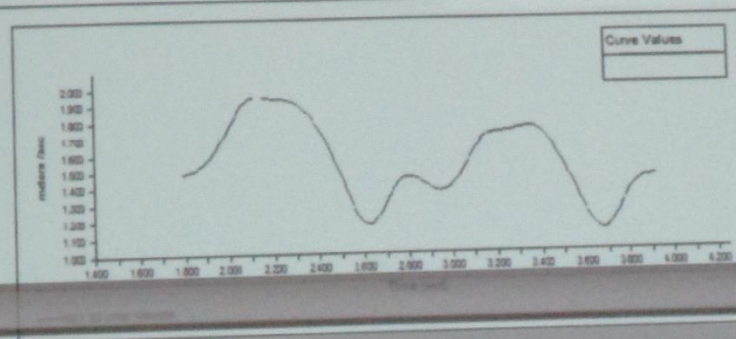
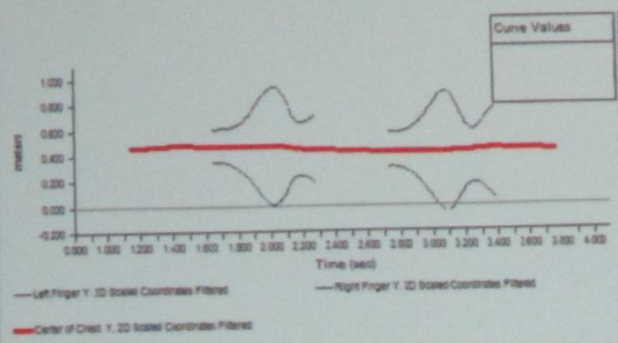






Example of increased impulse during pull.



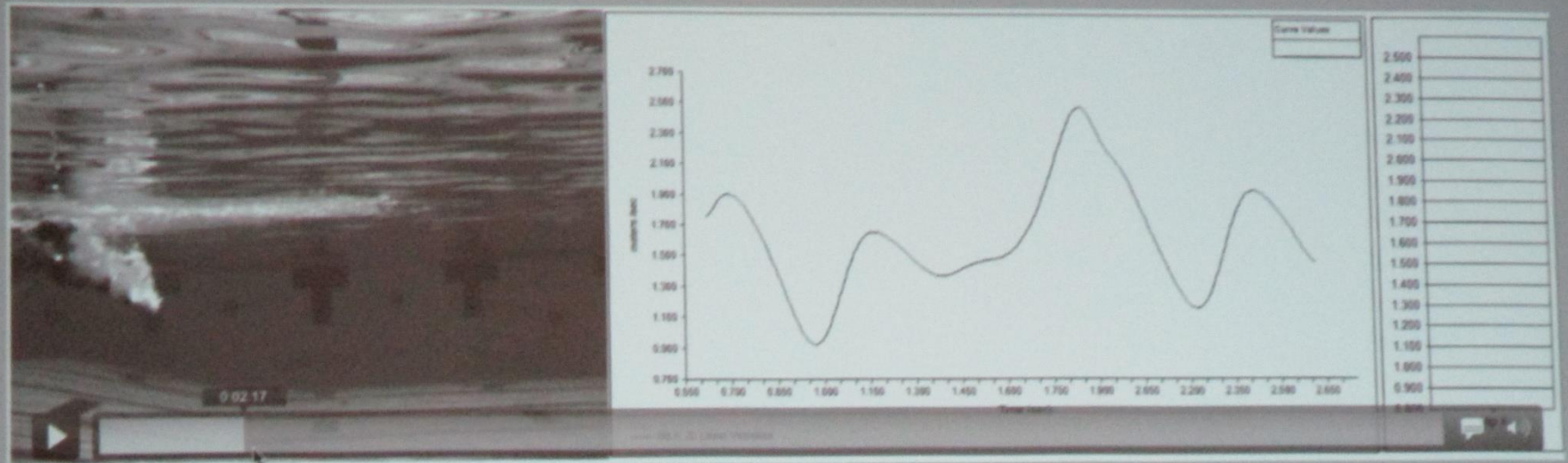




3. Where do we see reduced velocities in the stroke cycle?

- We see a significant drop-off in hip velocity during arm recovery
- This coincides with the timing of the up-beat of first kick





Percent drop-off in velocity: 41.1%



# Butterfly Velocity Fluctuations

	Pull Peak Velocity	Drop-off Velocity	Percentage Change
Michael Weiss	2.48	1.46	41.1
Franziska Weider	1.95	1.16	40.5
Average (15 swimmers tested)	*****	*****	37 to 44%



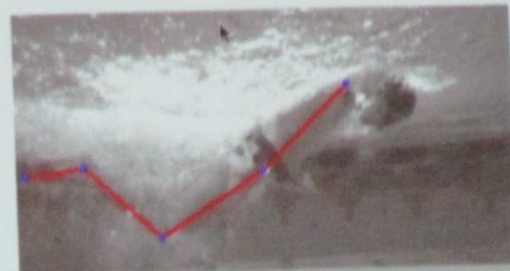
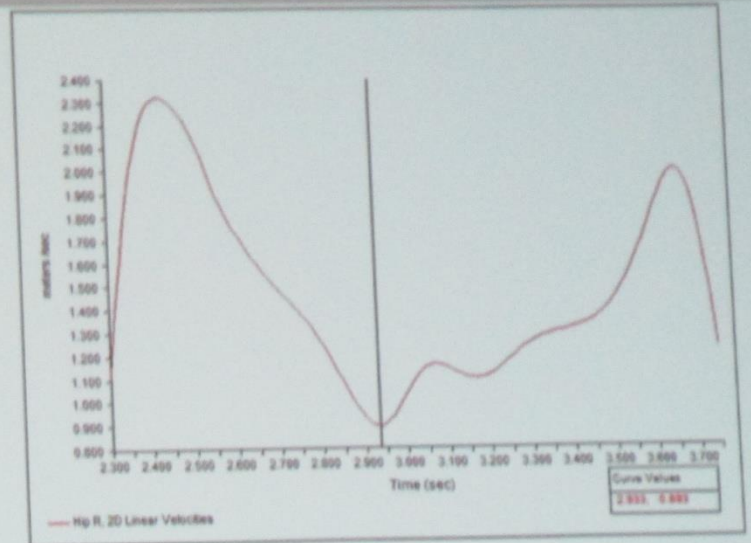
4. Do we need to be careful about bending the knees on the upbeat?

- We observe an increased reduction in velocity as the angle of the knees increases during the upbeat







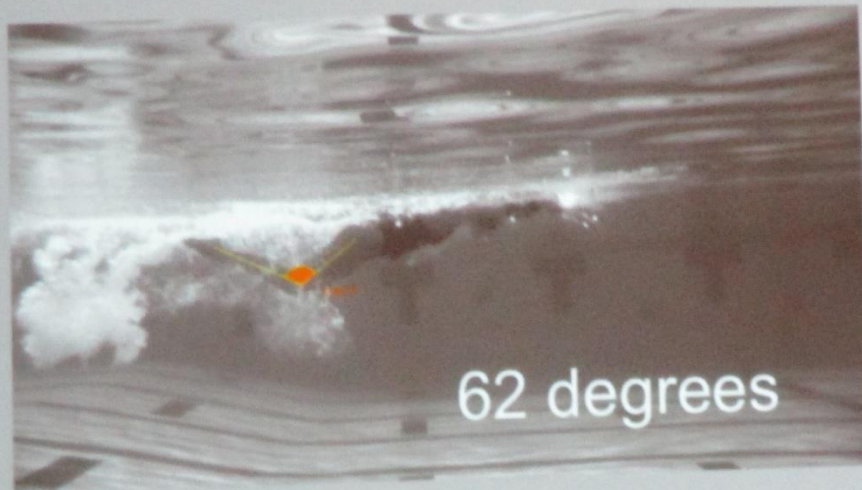


Percent drop-off in velocity: 61.3%





For a 14 degree (12%) difference in knee flexion on the upbeat.



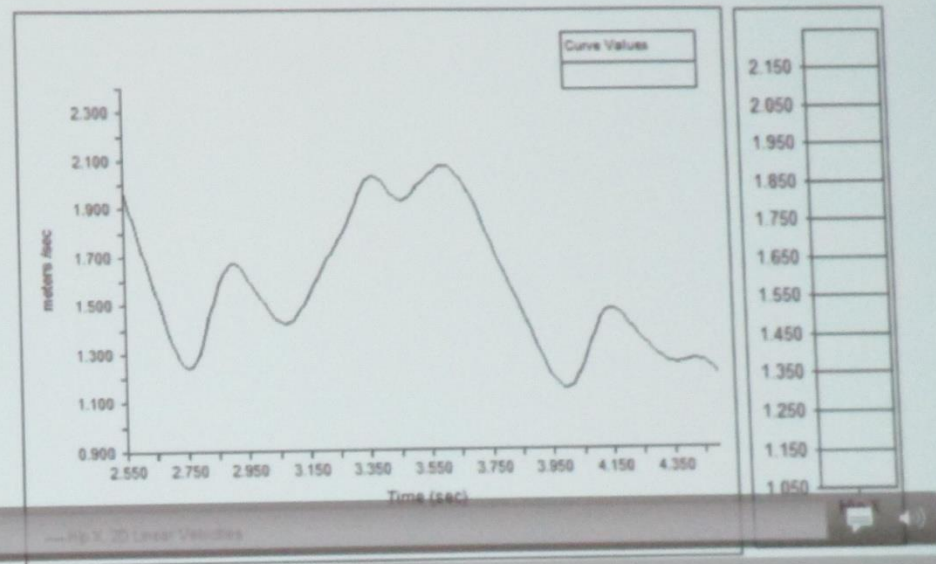
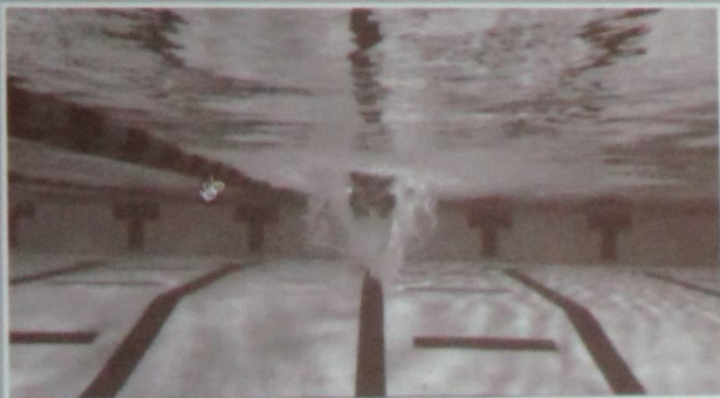
- Velocity reduction went from 24% to 47%.



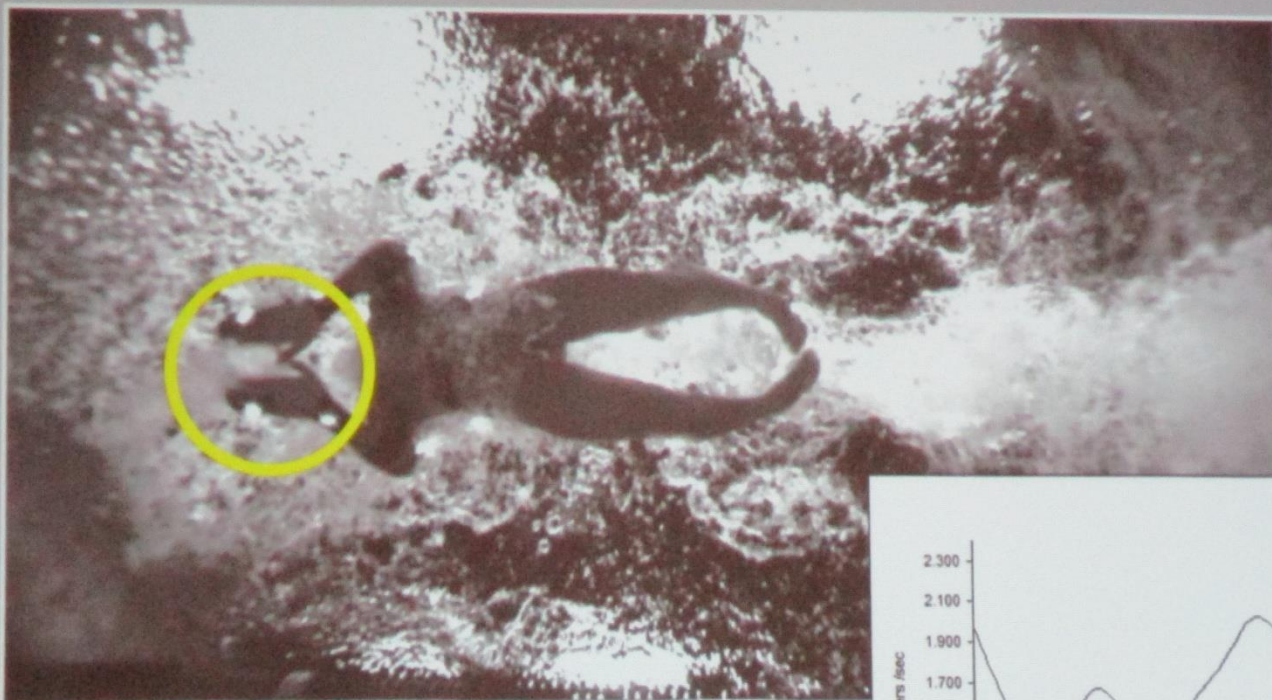
## 5. Subtle, but critical example of the loss of hold on the water

- During a regular Butterfly pull, the peak hip velocity curve should show an uninterrupted impulse
- However, in this example, we see a brief drop in velocity midway through the peak portion of the pull









3"

