

Methods

My methodology is to split the super-suited times into two categories for every event. The categories are meant to represent times set with the Speedo LZR Racer and times set with the other Supersuits covered completely in Polyurethane since those suits saved so much even over the already ridiculous Speedo LZR Racer. I generalized these two categories into the 2008 and 2009 categories since in 2008, almost all of the top times in the world were set with the Speedo LZR Racer (except in early 2008, there was a time when only about half the swimmers were wearing the LZR Racer since it released on February 13th, but by the time the Olympics came everyone wore it). In 2009, they were almost all set with the full-body polyurethane suits. (In my calculations, I'll have a few exceptions for 2009 for Phelps and Lochte since I know they still swam with the LZR Racer in 2009 due to sponsorships, so I put their 2009 swims into my 2008 category, which represents those swims with the LZR Racer.)

Once I have my two categories, I consider the top 10 best swimmers who ever swam a time in each category (that represent the two varieties of suits). I subtract their time set in that suit from their best swim set in a textile suit (i.e., A swim with a suit made before 2008 or after 2009 in this study). This gives me ten differences for each of those swimmers. I then average those differences, which I subtract from the record set in the given year. There is sometimes a case where the swimmers' super-suited time isn't their best time. Usually, this is because the swimmer was very young at the time and had many improvements to make in the future. Thus, I did not consider those negative differences. I also didn't consider huge outliers whose differences between textile and super suit personal bests are extreme since, usually, this meant they only swam that event during the super-suit era in international competitions or big meets.

Once I have those average differences and subtract the given difference from each world record set in that year/suit category, I provide an overview of the record history in the original article. I found all of these times on the [World Aquatics Swimming Time Database](#) by selecting the correct filters (e.g., finding super-suited times from the best times set in each event from 2008 and 2009 and then finding that swimmer's best time set in a year other than 2008 or 2009). I also found some on [Swim Cloud](#).

As mentioned in the original article, this study can be repeated and improved to get more accurate subtractions... maybe even to the point of considering subtracting a certain amount of the super suit records. However, as mentioned in the original article, there's always the variable of having good and bad days for performances as an athlete, which is an unmeasurable variable as it contains randomness.

There are four particular methods I have in mind to make the subtraction of times for athletes in the super suit era more accurate. The most obvious, and that one already discussed, is to split the times into categories based on whether it is the speedo LZR racer and the full-body polyurethane suits instead of generalizing into categories of years like I did since I grouped some people (hopefully not tons) into the wrong category (if it were based on suit). You'd have

to do what I did with Phelps and Lotche with everybody. Still, the challenge is that you'd have to know precisely which suit category everybody falls into in the race they swam, which is tricky considering that it was 15-16 years ago. The second way to make the study more accurate would be to go further with this idea and split up the category of "full body polyurethane suit" into the exact suit they wore based on brand and cut (full body, legs, and jammer for men and full body and knee skin for women). This presents the same challenges as the previous way to improve the study, but adding all the categories would lengthen the study quite a bit. The third way to enhance the study would be to consider the body position variable and split swimmers into categories based on whether swimmers had a good body position without super-suits or not and split the calculations into two different categories for that (this could also be divided into categories of big and small (skinny and muscular) people based on discussion in the original article. Finally, the study could be improved by increasing the sample size and considering more swimmers for each category (preferably 30 or more). To do this, we'd need to find a way to scrape data off a database every time ever, which would be incredibly difficult (in fact likely impossible) since we don't have a database containing every time ever from everywhere around the world at every swim meet.

One more thing is that if more people were considered in the study, I believe the study would have to change a little bit to fit a logarithm-transformed linear model instead of a linear one since slower people are going to have more significant time drops than the fastest people because they have more room to improve.

Calculations

Men's 50 Free 2008:

1. Eamon Sullivan: $21.65-21.28=0.37$
2. Cesar Cielo Filho: $21.32-21.30=0.02$
3. Amaury Leveaux: $21.93-21.45=0.48$
4. Alain Bernard: $21.92-21.49=0.43$
5. Ashley Callus: $22.09-21.62=0.47$
6. Ben Wildman-Tobriner: $21.88-21.64=0.24$
7. Roland Schoeman: $21.67-21.67=0.00$
8. Stefan Nystrad: $21.69-21.71$ (Negative... add an 11th person and don't consider this)
9. George Bovell: $21.51-21.77$ (Negative... add a 12th person and don't consider this)
10. Krisztian Takacs: $21.89-21.84=0.05$
11. Duje Draganja: $21.89-21.85=0.04$
12. Garrett Weber-Gale: $21.83-21.95$ (Negative... add a 13th person and don't consider this)
13. Rafed El Masri: $22.41-21.96=0.45$

Average Add: 0.26

Men's 50 Free 2009:

1. Cesar Cielo Filho: $21.32-20.91=0.41$
2. Frederick Bousquet: $21.36-20.94=0.42$
3. Ashley Callus: $22.09-21.19=0.90$
4. George Bovell: $21.51-21.20=0.31$
5. Amaury Leveaux: $21.93-21.25=0.68$
6. Dujie Draganja: $21.89-21.29=0.60$
7. Cullen Jones: $21.54-21.40=0.14$
8. Krisztian Takacs: $21.89-21.42=0.47$
9. Stefan Nystrad: $21.69-21.45=0.24$
10. Nathan Adrian: $21.37-21.46$ (Negative... add a 11th person and don't consider this)
11. Nicholas Santos: $22.07-21.69=0.38$

Average Add: 0.46

Women's 50 Free 2008

1. Libby Lenton: $24.53-23.97=0.56$
2. Britta Steffen: $24.37-24.06=0.31$
3. Dara Torres: $24.63-24.07=0.56$
4. Magdalena Veldhuis: $24.32-24.09=0.23$
5. Cate Campbell: $23.78-24.17$ (Negative... add a 11th person and don't consider this)
6. Hinkelien Schureuder: $24.66-24.52=0.14$
7. Kara Lynn Joyce: $24.73-24.63=0.10$
8. Therese Alshammar: $24.14-24.71$ (Negative... add a 12th person and don't consider this)
9. Aliaksandra Herasimenia: $24.11-24.72$ (Negative... add a 13th person and don't consider this)
10. Yingwen Zhu: $24.91-24.76=0.15$
11. Fran Halsall: $23.96-24.80$ (Negative... add a 14th person and don't consider this)
12. Jeanette Ottesen: $24.40-24.83$ (Negative... add a 15th person and don't consider this)
13. Malia Metella: $24.89-24.89=0.00$
14. Zhesi Li: $24.94-24.90=0.04$
15. Arlene Semeco: $25.12-24.98=0.14$

Average Add: 0.22

Women's 50 Free 2009

1. Britta Steffen: $24.37-23.73=0.64$
2. Therese Alshammar: $24.14-23.88=0.26$
3. Magdalena Veldhuis: $24.32-23.96=0.36$
4. Cate Campbell: $23.78-23.99$ (Negative... add a 11th person and don't consider this)
5. Fran Halsall: $23.96-24.11$ (Negative... add a 12th person and don't consider this)

6. Libby Lenton: $24.53-24.19=0.34$
7. Amanda Weir: $24.70-24.23=0.47$
8. Dara Torres: $24.63-24.43=0.20$
9. Malia Metella: $24.89-24.58=0.31$
10. Jeanette Ottesen: $24.40-24.62$ (Negative... add a 13th person and don't consider this)
11. Aliaksandra Herasimenia: $24.11-24.62$ (Negative... add a 14th person and don't consider this)
12. Sviatlana Khakhlova: $25.07-24.69=0.38$
13. Victoria Poon: $24.76-24.75=0.01$
14. Arlene Semeco: $25.12-24.76=0.36$

Average Add: 0.33

Men's 100 Free 2008:

1. Eamon Sullivan: $48.47-47.05=1.42$
2. Alain Bernard: $48.37-47.20=1.17$
3. Michael Phelps: $48.08-47.51=0.57$
4. Brent Hayden: $47.80-47.56=0.24$
5. Jason Lezak: $48.47-47.67=1.01$
6. Cesar Cielo Filho: $47.84-47.67=0.17$
7. Peter Van Den Hoogenband: $47.84-47.68=0.16$
8. Amaury Leveaux: $48.13-47.76=0.37$
9. Stefan Nystrand: $48.71-47.83=0.88$
10. Matthew Target: $48.32-47.88=0.44$

Average Add: 0.64

Men's 100 Free 2009:

1. Cesar Cielo Filho: $47.84-46.91=0.93$
2. Alain Bernard: $48.37-46.94=1.43$
3. Frederick Bousquet: $48.97-47.25=1.72$
4. Brent Hayden: $47.80-47.27=0.53$
5. David Walters: $48.96-47.33=1.63$
6. Stefan Nystrand: $48.71-47.37=1.34$
7. Fabien Gilot: $48.13-47.73=0.40$
8. Nicholas Oliveira: $48.30-47.78=0.52$
9. Michael Phelps: 47.78 (Not Considered since he wore the LZR Racer which belongs in the 08 category, add a 12th person and don't consider this)
10. Lyndon Ferns: $49.09-47.79=1.30$
11. Evgeny Lagunov: $48.23-47.90=0.33$

Average Add: 1.01

Women's 100 Free 2008:

1. Libby Lenton: $53.40-52.88=0.52$
2. Britta Steffen: $53.30-53.12=0.18$
3. Natalie Coughlin: $53.40-53.39=0.01$
4. Hanna-Maria Seppala: $54.37-53.60=0.77$
5. Magdalena Veldhuis: $53.70-53.67=0.03$
6. Igne Dekker: $54.37-53.77=0.60$
7. Fran Halsall: $53.48-53.81$ (Negative... add a 11th person and don't consider this)
8. Yingwen Zhu: $58.05-53.84=4.21$ (Huge outlier, need to get rid of this in calculation and add a 12th person and not consider this)
9. Celine Couderc: $55.30-53.97=1.33$
10. Jiaying Pang: $54.96-54.01=0.95$
11. Jeanette Ottesen: $53.35-54.04$ (Negative... add a 12th person and don't consider this)
12. Josefin Lillhage: $54.60-54.07=0.53$
13. Malia Metalla: $54.46-54.12=0.34$

Average Add: 0.53

Women's 100 Free 2009:

1. Britta Steffen: $53.30-52.07=1.23$
2. Libby Lenton: $53.40-52.62=0.78$
3. Fran Halsall: $53.48-52.87=0.61$
4. Amanda Weir: $53.60-53.02=0.58$
5. Jiaying Pang: $54.96-53.13=1.83$
6. Dana Vollmer: $53.59-53.30=0.29$
7. Ranomi Kromowidjojo: $52.75-53.31$ (Negative... add a 11th person and don't consider this)
8. Jeanette Ottesen: $53.35-53.41$ (Negative... add a 12th person and don't consider this)
9. Therese Alshammar: $54.33-53.58=0.75$
10. Igne Dekker: $54.37-53.61=0.76$
11. Evelin Verraszto: $54.29-53.74=0.55$
12. Daniela Schreiber: $54.31-53.76=0.55$

Average Add: 0.79

Men's 200 Free 2008:

1. Michael Phelps: $1:43.86-1:42.96=0.90$
2. Taehwan Park: $1:44.80-1:44.85$ (Negative... add a 11th person and don't consider this)
3. Peter Vanderkaay: $1:46.45-1:45.14=1.31$
4. Dominik Meichtry: $1:47.02-1:45.80=1.22$
5. Patrick Murphy: $1:48.55-1:45.95=2.60$

6. Jean Basson: $1:47.43-1:45.97=1.46$
7. Paul Biekdermann: $1:44.88-1:46.00$ (Negative... add a 12th person and don't consider this)
8. Lin Zhang: $1:47.30-1:46.13=1.17$
9. Brent Hayden: $1:48.85-1:46.40=2.45$
10. Yoshihiro Okumura: $1:48.07-1:46.44=1.63$
11. David Carry: $1:47.58-1:46.47=1.11$
12. David Walters: $1:47.78-1:46.57=1.21$

Average Add: 1.51

Men's 200 Free 2009:

1. Paul Biedermann: $1:44.88-1:42.00=2.88$
2. Michael Phelps: $-1:43.22$ (Don't consider this in calculation since he wore the LZR Racer, Add 11th Person))
3. Danila Izotov: $1:44.87-1:43.90=0.97$
4. Richard Berens: $1:46.56-1:44.95=1.61$
5. Nikita Lobintsev: $1:45.93-1:45.10=0.83$
6. Sho Uchida: $1:48.18-1:45.24=2.94$
7. Kenrick Monk: $1:46.94-1:45.46=1.48$
8. Jean Basson: $1:47.43-1:45.67=1.76$
9. Sebastiaan Verschuren: $1:45.87-1:45.69=0.18$
10. Laszlo Cheh: $1:48.89-1:45.78=3.11$
11. Robert Renwick: $1:46.52-1:45.99=0.53$

Average Add: 1.63

Women's 200 Free 2008:

1. Federica Pellegrini: $1:54.22-1:54.82$ (Negative... add a 11th person and don't consider this)
2. Sara Isakovix: $1:58.01-1:54.97=3.04$
3. Jiaying Pang: $1:58.60-1:55.05=3.55$
4. Katie Hoff: $1:57.09-1:55.78=1.31$
5. Coralie Balmy: $1:57.18-1:56.57=0.61$
6. Stephanie Rice: $1:57.57-1:56.60=0.97$
7. Yu Yang: $1:58.43-1:56.79=1.64$
8. Camelia Potec: $1:57.80-1:56.87=0.93$
9. Caitlin McClatchey: $1:57.25-1:56.97=0.28$
10. Kristy Coventry: $2:01.20-1:57.04=4.16$ (Huge outlier, need to get rid of this in calculation and add a 12th person and not consider this)
11. Agnes Mutina: $1:57.12-1:57.25$ (Negative... add a 13th person and don't consider this)
12. Allison Schmitt: $1:53.61-1:57.38$ (Negative... add a 14th person and don't consider this)
13. Bronte Barratt: $1:55.25-1:57.55$ (Negative... add a 15th person and don't consider this)
14. Haruka Ueda: $1:57.37-1:57.64$ (Negative... add a 16th person and don't consider this)

15. Joanne Jackson: $1:57.92-1:57.70=0.22$
16. Ophelie-Cyrielle Etienne: $1:58.23-1:57.83=0.40$

Average Add: 1.30

Women's 200 Free 2009:

1. Federica Pellegrini: $1:54.22-1:52.98=1.24$
2. Allison Schmitt: $1:53.61-1:54.96$ (Negative... add a 11th person and don't consider this)
3. Dana Vollmer: $1:56.47-1:55.29=1.18$
4. Yu Yang: $1:58.43-1:55.47=2.96$
5. Joanne Jackson: $1:57.92-1:55.54=2.38$
6. Ariana Kukors: $1:58.95-1:56.05=2.90$
7. Jiaying Pang: $1:58.60-1:56.47=2.13$
8. Agnes Mutina: $1:57.12-1:56.47=0.65$
9. Evelin Verraszto: $1:58.07-1:56.51=1.56$
10. Caitlin McClatchey: $1:57.25-1:56.62=0.63$
11. Coralie Balmy: $1:57.18-1:56.79=0.39$

Average Add: 1.60

Men's 400 Free 2008:

- No records in 2008, Analysis not needed

Men's 400 Free 2009:

1. Paul Biedermann: $3:44.14-3:40.07=4.07$
2. Oussama Mellouli: $3:45.31-3:41.11=4.20$
3. Lin Zhang: $3:46.91-3:41.35=5.56$
4. Peter Vanderkaay: $3:44.69-3:43.20=1.49$
5. Mads Glaesner: $3:46.93-3:44.40=2.53$
6. David Davies: $3:49.44-3:45.43=4.01$
7. Ryan Cochrane: $3:43.46-3:45.52$ (Negative... add a 11th person and don't consider this)
8. Gergo Kis: $3:46.77-3:45.68=1.09$
9. Daniel Madwed: $3:55.55-3:45.95=9.60$
10. Nikita Lobintsev: $3:48.46-3:45.97=2.49$
11. Bobby Hurley: $3:47.67-3:46.01=1.66$

Average Add: 3.67

Women's 400 Free 2008:

1. Federica Pellegrini: $4:01.97-4:01.53=0.44$
2. Rebecca Adlington: $4:02.35-4:02.24=0.11$
3. Katie Hoff: $4:05.65-4:03.29=2.36$
4. Joanne Jackson: $4:06.47-4:03.52=2.95$

5. Coralie Balmy: 4:03.40-4:03.60 (Negative... add a 11th person and don't consider this)
6. Bronte Barratt: 4:03.52-4:04.16 (Negative... add a 12th person and don't consider this)
7. Camelia Potec: 4:06.34-4:04.55=1.79
8. Laure Manaudou: 4:02.13-4:04.93 (Negative... add a 13th person and don't consider this)
9. Otylia Jędrzejczak: 4:04.23-4:05.50 (Negative... add a 14th person and don't consider this)
10. Linda Mackenzie: 4:07.26-4:05.91=1.35
11. Elena Sokolova: 4:08.51-4:06.30=2.21
12. Stephanie Horner: 4:13.49-4:07.45=6.04
13. Wendy Trott: 4:10.10-4:08.38=1.72
14. Lotte Friis: 4:03.98-4:08.47 (Negative... add a 15th person and don't consider this)
15. Kristy Coventry: 4:18.20-4:08.50=9.70 (Huge outlier, need to get rid of this in calculation and add a 16th person and not consider this)
16. Alessia Filippi: 4:08.43-4:09.12 (Negative... add a 17th person and don't consider this)
17. Flavia Rigamonti: 4:11.77-4:09.29=2.48

Average Add: 2.15

Women's 400 Free 2009:

1. Federica Pellegrini: 4:01.97-3:59.15=2.82
2. Joanne Jackson: 4:06.47-4:00.60=5.87
3. Rebecca Adlington: 4:02.35-4:00.79=1.56
4. Allison Schmitt: 4:01.77-4:02.51(Negative... add a 11th person and don't consider this)
5. Coralie Balmy: 4:03.40-4:03.29=0.11
6. Camelia Potec: 4:06.34-4:03.41=2.93
7. Ophélie-Cyrielle Etienne: 4:05.40-4:04.54=0.86
8. Lotte Friis: 4:03.98-4:05.40 (Negative... add a 12th person and don't consider this)
9. Ellen Fullerton: 4:14.07-4:08.31=5.76
10. Alessia Filippi: 4:08.43-4:08.70 (Negative... add a 13th person and don't consider this)
11. Erika Villaecija: 4:09.73-4:08.77=0.96
12. Jordis Steinegger: 4:11.88-4:09.30=2.58
13. Kevyn Peterson: -4:10.01 (No recorded textile time... add a 13th person and don't consider this)
14. Cecilia Biagioli: 4:12.53-4:10.16=2.37

Average Add: 2.58

Men's 800 Free 2008:

- No records in 2008, Analysis not needed

Men's 800 Free 2009:

1. Lin Zhang: 7:53.59-7:32.12=21.47
2. Oussama Mellouli: 7:45.99-7:35.27= 10.72

3. Ryan Cocorane: 7:41.86-7:41.92= (Negative... add a 11th person and don't consider this)
 4. Federico Colbertaldo: 7:49.98-7:43.84=6.14
 5. David Davies: 7:51.54-7:44.32=7.22
 6. Yuriy Prilukov: 7:46.64-7:46.05=0.59
 7. Chad la Tourette: 7:46.52-7:47.24= (Negative... add a 12th person and don't consider this)
 8. Peter Vanderkaay: 7:46.64-7:48.44= (Negative... add a 13th person and don't consider this)
 9. Marco Rivera: 7:57.14-7:49.09=8.05
 10. Takeshi Matsuda: 7:51.87-7:49.65=2.22
 11. Jan Wolfgang: 7:59.91-7:50.10=9.81
 12. Bobby Hurley: 7:52.71-7:50.65=2.06
 13. Yang Sun: 7:38.57-7:51.74= (Negative... add a 14th person and don't consider this)
 14. Mads Glaesner: 7:51.24-7:52.18= (Negative... add a 15th person and don't consider this)
 15. Pzemyslaw Stanczyk: 7:47.91-7:53.67= (Negative... add a 16th person and don't consider this)
 16. Ryan Napoleon: 7:55.20-7:53.92= 1.28
- Average Add: 6.96

Women's 800 Free 2008:

1. Rebecca Adlington: 8:17.51-8:14.10=3.41
2. Camelia Potec: 8:26.81-8:19.70=7.11
3. Alessia Filippi: 8:33.55-8:20.23=13.32
4. Katie Hoff: 8:22.80-8:20.81=1.99
5. Lotte Friis: 8:16.32-8:21.74= (Negative... add a 11th person and don't consider this)
6. Kylie Palmer: 8:26.60-8:22.81=3.79
7. Elena Sokolova: 8:36.44-8:23.07=13.37
8. Erika Villaecija: 8:27.07-8:24.08=2.99
9. Xuanxu Li: 8:23.55-8:24.37= (Negative... add a 12th person and don't consider this)
10. Cassandra Patten: 8:32.32-8:25.91=6.41
11. Wendy Trott: 8:25.71-8:36.21= (Negative... add a 13th person and don't consider this)
12. Kate Ziegler: 8:18.52-8:26.98= (Negative... add a 14th person and don't consider this)
13. Flavia Rigamonti: 8:25.59-8:28.16= (Negative... add a 15th person and don't consider this)
14. Coralie Balmy: 8:27.15-8:28.34= (Negative... add a 16th person and don't consider this)
15. Andreina Pinto: 8:25.93-8:30.30= (Negative... add a 17th person and don't consider this)
16. Meihong You: 8:32.70-8:31.11=1.59
17. Melissa Gorman: 8:29.73-8:32.34= (Negative... add a 18th person and don't consider this)
18. Sophie Huber: 8:28.23-8:32.59= (Negative... add a 19th person and don't consider this)

19. Charetzeni Susana Escobar Torres: 8:39.41-8:33.51=5.90

Average Add: 5.99

Women's 800 Free 2009:

1. Lotte Friis: 8:16.32-8:15.92=0.40
2. Joanne Jackson: 8:34.54-8:16.66=17.88
3. Camelia Potec: 8:26.81-8:16.70=10.11
4. Alessia Filippi: 8:33.55-8:17.21=16.34
5. Rebecca Adlington: 8:17.51-8:17.90= (Negative... add a 11th person and don't consider this)
6. Erika Villaecija: 8:27.07-8:25.97=1.10
7. Ophelle-Cyrielle Etienne: 8:24.00-8:26.35= (Negative... add a 12th person and don't consider this)
8. Wendy Trott: 8:25.71- 8:27.26= (Negative... add a 13th person and don't consider this)
9. Kristel Kobrich: 8:26.75-8:27.90= (Negative... add a 14th person and don't consider this)
10. Chloe Sutton: 8:23.24-8:29.25= (Negative... add a 15th person and don't consider this)
11. Coralie Balmy: 8:27.15-8:31.39= (Negative... add a 16th person and don't consider this)
12. Whitney Sprague: 8:44.09-8:32.71=11.38
13. Joanna Maranhao: 8:35.58-8:32.96=2.62
14. Eider Santamaria: 8:37.71-8:33.51=4.20
15. Andreina Pinto: 8:25.93-8:34.17= (Negative... add a 17th person and don't consider this)
16. Yumi Kida: 8:37.57-8:34.98=2.59
17. Shu en Lynette Lim: 8:50.00-8:35.41=14.69

Average Add: 8.13

1500 Free:

- There were no records during the supersuit era in the mens or womens 1500, so analysis is unneeded.

Men's 50 Back 2008: (TAKE OUT OLYMPICS SPLITS AND CHECK ALL TIMES TO SEE)

- Only Considered 5 times for this event since the 50 back is not swam at the olympics
1. Randall Bal: 24.83-24.33=0.50 (Huge outlier, need to get rid of this in calculation and add a 6th person and not consider this)
 2. Liam tancock: 24.50-24.47=0.03
 3. Aristeidis Grigoraids: 24.95-25.13= (Negative... add a 7th person and don't consider this)
 4. Flori Lang: 25.07-25.18= (Negative... add a 8th person and don't consider this)
 5. Guy Barnea: 24.73-25.43= (Negative... add a 9th person and don't consider this)
 6. Lubos Krizko: 25.82-25.44=0.38
 7. Aschwin Wildeboer: 24.58-25.59= (Negative... add a 10th person and don't consider this)

8. Ben Treffers: 24.54-25.60= (Negative... add a 11th person and don't consider this)
 9. Mirco di Tora: 24.95-25.60= (Negative... add a 12th person and don't consider this)
 10. Gordon Kozulj: 26.16-25.62=0.54 (Huge outlier, need to get rid of this in calculation and add a 13th person and not consider this)
 11. Nick Driebergen: 25.25-25.62= (Negative... add a 14th person and don't consider this)
 12. Orn Arnarson: 26.18-25.86=0.32
 13. Pavel Sankovich: 24.74-25.89= (Negative... add a 15th person and don't consider this)
 14. Arkady Vyatchanin: 25.86-25.89= (Negative... add a 16th person and don't consider this)
 15. Benjamin Stasiulis: 25.74-25.90= (Negative... add a 17th person and don't consider this)
 16. Sergei Fesikov: 24.79-25.94= (Negative... add a 18th person and don't consider this)
 17. Razvan Ionut Florea: 26.48-25.95= (Huge outlier, need to get rid of this in calculation and add a 19th person and not consider this)
- Too slow after this..... Only consider the three times :(

Average Add: 0.24

Men's 50 Back 2009:

1. Liam tancock: 24.50-24.04=0.46
2. Junya Koga: 24.28-24.24=0.04
3. Johannes Zandberg: 24.66-24.34=0.32
4. Camille Lacourt: 24.07-24.46= (Negative... add a 11th person and don't consider this)
5. Aschwin Wildeboer: 24.58-24.48=0.10
6. Guilherme Guido: 24.72-24.49=0.23
7. Helge Meeuw: 25.04-24.59=0.45
8. Flori Lang: 25.07-24.75=0.32
9. Mirco di Tora: 24.95-24.77=0.18
10. Aristeidis Grigoraïdis: 24.95-24.77=0.18
11. Juan M Rando: 25.08-24.77=0.0.31

Average Add: 0.26

Women's 50 Back 2008: (TAKE OUT OLYMPICS SPLITS AND CHECK ALL TIMES TO SEE)

- Only Considered 5 times for this event since the 50 back is not swam at the olympics
1. Sophie Edington: 27.83-27.67=0.16
 2. Emily Seebohm: 27.37-27.95= (Negative... add a 6th person and don't consider this)
 3. Hayley Mcgregory: 29.47-28.00=1.47 (Huge outlier, need to get rid of this in calculation and add a 7th person and not consider this)
 4. Sanja Jovanovic: 28.31-28.05=0.26
 5. Anastasia Zueva: 27.79-28.05= (Negative... add a 8th person and don't consider this)
 6. Nina Zhivanevskaya: 28.48-28.11= 0.37
 7. Aliaksandra Herasimenia: 27.23-28.64= (Negative... add a 9th person and don't consider this)
 8. Grace Loh: 28.15-28.83= (Negative... add a 10th person and don't consider this)
 9. Maria Mercedes: 27.71-28.85= (Negative... add a 11th person and don't consider this)

10. Hinkelien Schreuder: $28.36-28.86=$ (Negative... add a 12th person and don't consider this)

11. Hanna-Maria Seppala: $29.36-28.98=0.38$

12. Nikolett Szepesi: $29.13-29.01=0.12$

Average Add: 0.26

Women's 50 Back 2009:

1. Jing Zhao: $27.29-27.06=0.23$

2. Daniela Samulski: $27.99-27.23=0.76$

3. Chang Gao: $27.45-27.28=0.17$

4. Anastasia Zueva: $27.79-27.31=0.48$

5. Sophie Edington: $27.83-27.51=0.32$

6. Aliaksandra Herasimenia: $27.23-27.57=$ (Negative... add a 11th person and don't consider this)

7. Emily Seebom: $27.37-27.70=$ (Negative... add a 12th person and don't consider this)

8. Fabiola Molina: $28.25-27.70=0.55$

9. Aya Terakawa: $27.51-27.73=$ (Negative... add a 13th person and don't consider this)

10. Hinkelien Schreuder: $28.36-27.77=0.59$

11. Hayley Mcgregory: $29.47-27.83=1.64$

12. Shiho Sakai: $28.17-27.88=0.29$

13. Gemma Spofforth: $28.03-27.92=0.11$

Average Add: 0.51

Men's 100 Back 2008:

1. Aaron Peirsol: $52.98-52.54=0.44$

2. Nick Thoman: $52.86-52.91=$ (Negative... add a 11th person and don't consider this)

3. Hayden Stoeckel: $53.55-52.97=0.58$

4. Matt Grevers: $52.08-52.99=$ (Negative... add a 12th person and don't consider this)

5. Arkady Vyatchanin: $53.50-53.06=0.44$

6. Ashley Delaney: $53.55-53.31=0.14$

7. Liam Tancock: $53.16-53.39=$ (Negative... add a 13th person and don't consider this)

8. Aschwin Wildeboer Faber: $53.67-53.51=0.16$

9. Junichi Miyashita: $54.64-53.69=0.95$

10. Johannes Zandberg: $54.54-53.75=0.79$

11. Markus Rogan: $53.78-53.80=$ (Negative... add a 14th person and don't consider this)

12. Tomomi Morita: $54.25-53.95=0.30$

13. Mirco di Tora: $54.27-54.05=0.22$

14. Lubos Krizko: $55.48-54.07=1.41$

Average Add: 0.54

Men's 100 Back 2009:

1. Aaron Peirsol: $52.98-51.94=1.04$

2. Ryosuke Irie: $52.34-52.24=0.10$
3. Junya Koga: $53.20-52.26=0.94$
4. Helge Meeuw: $53.22-52.27=0.95$
5. Aschwin Wildeboer Faber: $53.67-52.38=0.29$
6. Arkady Vyatchanin: $53.50-52.57=0.93$
7. Liam Tancock: $53.16-52.73=0.43$
8. Matt Grevers: $52.08-52.82=$ (Negative... add a 11th person and don't consider this)
9. Aristeidis Grigoriadis: $53.86-53.03=0.83$
10. Ashley Delaney: $53.55-53.10=0.45$
11. Markus Rogan: $53.78-53.33=0.45$

Average Add: 0.64

Women's 100 Back 2008:

1. Kristy Coventry: $1:00.08-58.77=1.31$
2. Natalie Coughlin: $59.05-58.94=0.11$
3. Gemma Spofforth: $59.20-59.05=0.15$
4. Hayley McGregory: $1:00.93-59.15=1.78$ (Huge outlier, need to get rid of this in calculation and add a 11th person and not consider this)
5. Anastasia Zueva: $59.00-59.16=$ (Negative... add a 12th person and don't consider this)
6. Margaret Hoelzer: $1:01.18-59.29=1.89$ (Huge outlier, need to get rid of this in calculation and add a 13th person and not consider this)
7. Emily Seebohm: $58.23-59.33=$ (Negative... add a 14th person and don't consider this)
8. Reiko Nakamura: $1:00.40-59.36=1.04$
9. Laure Manaudou: $59.87-59.50=0.37$
10. Jing Zhao: $58.95-59.56=$ (Negative... add a 15th person and don't consider this)
11. Hanae Ito: $1:00.62-1:00.13=0.49$
12. Nina Zhivanevskaya: $1:00.74-1:00.29=0.45$
13. Julia Wilkinson: $59.85-1:00.38=$ (Negative... add a 16th person and don't consider this)
14. Elizabeth Simmonds: $59.72-1:00.39$ (Negative... add a 17th person and don't consider this)
15. Mary Mohler: $-1:00.44=$ (Could not find a textile time, add a 18th person)
16. Antje Buschschulte: $1:00.33-1:00.48$ (Negative... add a 19th person and don't consider this)
17. Sanja Jovanovic: $1:01.59-1:00.64=0.95$
18. Sophie Edington: $1:00.34-1:00.65=$ (Negative... add a 20th person and don't consider this)
19. Elizabeth Coster: $1:01.75-1:00.66=1.09$
20. Kseniya Moskvina: $1:01.15-1:00.70=0.45$

Average Add: 0.64

Women's 100 Back 2009:

1. Gemma Spofforth: $59.20-58.12=1.08$

2. Anastasia Zuyeva: $59.00-58.18=0.82$
3. Emily Seebohm: $58.23-58.88=$ (Negative... add a 11th person and don't consider this)
4. Jing Zhao: $58.95-58.98=$ (Negative... add a 12th person and don't consider this)
5. Shiho Sakai: $59.87-59.14=0.73$
6. Kristy Coventry: $1:00.08-59.21=0.87$
7. Hayley McGregor: $1:00.93-59.42=1.51$
8. Elizabeth Simmonds: $59.72-59.55=0.17$
9. Daniela Samulski: $1:00.54-59.77=0.77$
10. Chang Gao: $59.90-59.84=0.06$
11. Fabiola Molina: $1:00.43-1:00.07=0.36$
12. Aya Terakawa: $58.70-1:00.18$ (Negative... add a 13th person and don't consider this)
13. Emily Thomas: $1:01.55-1:00.22=1.33$

Average Add: 0.77

Men's 200 Back 2008:

1. Ryan Lochte: $1:52.96-1:53.82=$ (Negative... add a 11th person and don't consider this)
2. Aaron Peirsol: $1:54.44-1:54.32=0.12$
3. Arkady Vyatchanin: $1:55.30-1:54.93= 0.37$
4. Markus Rogan: $1:56.02-1:55.49=0.53$
5. Ryosuke Irie: $1:53.26-1:55.72=$ (Negative... add a 12th person and don't consider this)
6. Razvan Ionut Florea: $1:57.03-1:56.45=0.58$
7. Gregor Tait: $1:58.65-1:56.72=1.93$
8. Hayden Stoeckel: $1:58.04-1:56.73=1.31$
9. Helge Meeuw: $1:57.45-1:56.85=0.60$
10. Ashley Delaney: $1:57.50-1:57.73=$ (Negative... add a 13th person and don't consider this)
11. Gordon Kozulj: $1:57.47-1:57.81=$ (Negative... add a 14th person and don't consider this)
12. Damiano Lestingi: $1:58.04-1:58.25=$ (Negative... add a 15th person and don't consider this)
13. Aschwin Wildeboer Faber: $1:58.74-1:58.26=0.48$
14. Keith Beavers: $1:59.35-1:58.50=0.85$
15. George Du Rand: $1:58.69-1:58.61=0.08$

Average Add: 0.69

Men's 200 Back 2009:

1. Aaron Peirsol: $1:54.44-1:51.92=2.52$
2. Ryosuke Irie: $1:53.26-1:52.51=0.75$
3. Ryan Lotche: (Considered in 2008 category since he wore the LZR racer... add a 11th person and don't consider this)
4. Arkady Vyatchanin: $1:55.30-1:54.75= 0.55$
5. Aschwin Wildeboer Faber: $1:58.74-1:54.92=3.82$
6. Stanislav Donetc: $1:57.18-1:55.25=1.93$

7. Radoslaw Kawecki: $1:54.24-1:55.60=$ (Negative... add a 12th person and don't consider this)
8. George du Rand: $1:58.69-1:55.75=2.94$
9. Chris Walker-Hebborn: $1:57.17-1:56.05=1.12$
10. Omar Pinzobn Garcia: $1:58.12-1:56.40=1.72$
11. Yannick Lebherz: $1:56.71-1:56.69= 0.02$
12. Nick Driebergen: $1:57.29-1:56.85=0.44$

Average Add: 1.58

Women's 200 Back 2008:

1. Kristy Coventry: $2:07.54-2:05.24=2.30$
2. Margaret Hoelzer: $2:07.16-2:06.09=1.07$
3. Laure Manaudou: $2:08.06-2:06.64=1.42$
4. Reiko Nakamura: $2:08.54-2:07.13=1.41$
5. Anastasia Zueva: $2:05.92-2:07.88=$ (Negative... add a 11th person and don't consider this)
6. Elizabeth Beisel: $2:06.18-2:07.90=$ (Negative... add a 12th person and don't consider this)
7. Meagen Nay: $2:07.16-2:08.09=$ (Negative... add a 13th person and don't consider this)
8. Elizabeth Simmonds: $2:06.79-2:08.51=$ (Negative... add a 14th person and don't consider this)
9. Belinda Hocking: $2:06.06-2:08.80=$ (Negative... add a 15th person and don't consider this)
10. Jing Zhao: $2:06.46-2:08.97=$ (Negative... add a 16th person and don't consider this)
11. Gemma Spofforth: $2:08.25-2:09.19=$ (Negative... add a 17th person and don't consider this)
12. Melissa Ingram: $2:09.43-2:09.34=0.11$
13. Alexianne Castel: $2:08.24-2:09.37=$ (Negative... add a 18th person and don't consider this)
14. Nikolett Szepesi: $2:10.66-2:09.46=1.20$
15. Hanae Ito: $2:09.21-2:09.86=$ (Negative... add a 19th person and don't consider this)
16. Stanislava Komarova: $2:09.39-2:09.93=$ (Negative... add a 20th person and don't consider this)
17. Melissa Corfe: $2:13.17-2:10.03=3.14$ (Huge outlier... add a 21st person and don't consider this)
18. Evelin Verraszto: $2:10.80-2:10.45=0.35$
19. Anja Carmen: $2:10.86-2:10.49=0.37$
20. Escarlata González: $2:12.37-2:10.58=1.79$
21. Iryna Amshennikova: $2:10.82-2:11.42=$ (Negative... add a 22nd person and don't consider this)
22. Yanyan Chen: $2:13.18-2:11.95= 1.23$

Average Add: 1.13

Women's 200 Back 2009:

1. Kristy Coventry: $2:07.54-2:04.81=2.73$
2. Anastasia Zueva: $2:05.92-2:04.94=0.98$
3. Elizabeth Beisel: $2:06.18-2:06.39=$ (Negative... add a 11th person and don't consider this)
4. Gemma Spofforth: $2:08.25-2:06.66=1.59$
5. Elizabeth Simmonds: $2:06.79-2:07.21=$ (Negative... add a 12th person and don't consider this)
6. Elizabeth Pelton: $2:06.29-2:08.04=$ (Negative... add a 13th person and don't consider this)
7. Belinda Hocking: $2:06.06-2:08.07=$ (Negative... add a 14th person and don't consider this)
8. Alexianne Castel: $2:08.24-2:08.13=0.11$
9. Aya Terakawa: $2:07.73-2:08.49=$ (Negative... add a 15th person and don't consider this)
10. Stephanie Proud: $2:09.04-2:08.91=0.13$
11. Melissa Ingram: $2:09.43-2:09.13=0.30$
12. Kristen Elizabeth Heiss: $2:11.59-2:09.22=2.37$
13. Alicja Tchorz: $2:10.04-2:09.74=0.30$
14. Anqi Bai: $2:09.75-2:09.96=$ (Negative... add a 16th person and don't consider this)
15. Lauren Lavigna: $2:10.83-2:10.03=0.80$
16. Tomoyo Fukuda: $2:12.67-2:10.09=2.58$

Average Add: 1.19

Men's 50 Breast 2008:

- No records in 2008, Analysis not needed

Men's 50 Breast 2009:

1. Cameron van den Burgh: $26.54-26.67=$ (Negative... add a 11th person and don't consider this)
2. Felipe Franca Silva: $26.75-26.76=$ (Negative... add a 12th person and don't consider this)
3. Hendrik Feldwehr: $27.31-26.83=0.48$
4. Mark Gangloff: $27.49-26.86=0.63$
5. Brenton Rickard: $27.40-26.95=0.45$
6. Matjaz Markic: $27.36-27.10=0.26$
7. Kevin Andrew Swander: $28.03-27.14=0.89$
8. Joao Gomes Junior: $26.42-27.14=$ (Negative... add a 13th person and don't consider this)
9. Emil Tahirovic: $27.50-27.19=0.31$
10. Alessandro Terrin: $27.48-27.20=0.28$
11. Dimitrios Xynadas: $28.73-27.20= 0.53$
12. Barry Murphy: $27.52-27.26= 0.26$
13. Johannes Neumann: $27.98-27.27= 0.71$

Average Add: 0.48

Women's 50 Breast 2008:

- No records in 2008, Analysis not needed

Women's 50 Breast 2009:

1. Jessica Hardy: $29.80-29.80= 0.00$
2. Yuliya Efimova: $29.52-30.09=$ (Negative... add a 11th person and don't consider this)
3. Rebecca Soni: $30.58-30.11=0.47$
4. Sarah Katsoulis: $31.05-30.16=0.89$
5. Amanda Reason: $31.78-30.23= 1.55$
6. Kasey Carlson: $31.02-30.34= 0.68$
7. Moniek Nijhuis: $30.61-30.38= 0.23$
8. Huijia Chen: $31.56-30.46= 1.10$
9. Annamay Pierse: $31.71-30.53= 1.18$
10. Kerstin Vogel: $31.87-30.77= 1.10$
11. Tarnee White: $31.14-30.80= 0.34$

Average Add: 0.75

Men's 100 Breast 2008:

1. Kosuke Kitajima: $58.90-58.91$ (Negative... add a 11th person and don't consider this)
2. Alexander Dale Oen: $58.71-59.16=$ (Negative... add a 12th person and don't consider this)
3. Hugues Duboscq: $1:00.05-59.37=0.68$
4. Brendan Hansen: $59.13-59.57=$ (Negative... add a 13th person and don't consider this)
5. Brenton Rickard: $59.50-59.65=$ (Negative... add a 14th person and don't consider this)
6. Roman Sludnov: $59.94-59.87=0.07$
7. Cameron van den Burgh: $58.46-59.96=$ (Negative... add a 15th person and don't consider this)
8. Gledrius Titenis: $58.96-1:00.11=$ (Negative... add a 16th person and don't consider this)
9. Igor Borysik: $1:00.97-1:00.20=0.77$
10. Mark Gangloff: $59.76-1:00.24=$ (Negative... add a 17th person and don't consider this)
11. Damir Dugonjic: $59.68-1:00.35=$ (Negative... add a 18th person and don't consider this)
12. Christian Sprenger: $58.79-1:00.36=$ (Negative... add a 19th person and don't consider this)
13. Oleg Lisogor: $1:00.06-1:00.53=$ (Negative... add a 20th person and don't consider this)
14. Mike Alexandrov: $1:00.26-1:00.61=$ (Negative... add a 21st person and don't consider this)
15. Yuta Suenaga: $59.93-1:00.67=$ (Negative... add a 22nd person and don't consider this)
16. Chris Cook: $1:00.64-1:00.70=$ (Negative... add a 23rd person and don't consider this)
17. Grigory Falko: $1:00.40-1:00.70=$ (Negative... add a 24th person and don't consider this)
18. Vladislav Polyakov: $1:01.03-1:00.80=0.23$

19. Istvan Hunor Mate: $1:01.65-1:00.93=0.72$
20. Richard Bodor: $1:01.11-1:00.97=0.14$
21. Michael Brown: $1:00.01-1:00.98=$ (Negative... add a 25th person and don't consider this)
22. Glenn Snyders: $59.78-1:00.98=$ (Negative... add a 26th person and don't consider this)
23. Felipe Franca Silva: $59.01-1:01.04=$ (Negative... add a 27th person and don't consider this)
24. Henrique Barbose: $1:00.38-1:01.11=$ (Negative... add a 28th person and don't consider this)
25. Thijis van Valkengoed: $1:02.03-1:01.22=0.81$
26. Matjaz Markic: $1:01.46-1:01.31=0.15$
27. Daniel Gyurta: $59.53-1:01.31=$ (Negative... add a 29th person and don't consider this)
28. Kristopher Gilchrist: $1:00.99-1:01.34=$ (Negative... add a 30th person and don't consider this)
29. Mathieu Bois: $1:01.83-1:01.45=0.38$
30. Jiri Jedlicka: $1:01.92-1:01.46=0.46$

Average Add: 0.44

Men's 100 Breast 2009:

1. Brenton Rickard: $59.50-58.58=0.92$
2. Hugues Duboscq: $1:00.05-58.64=1.41$
3. Igor Borysik: $1:00.97-58.67=2.30$
4. Cameron van den Burgh: $58.46-58.95=$ (Negative... add a 11th person and don't consider this)
5. Eric Shanteau: $59.96-58.96= 1.00$
6. Henrique Barbosa: $1:00.38-59.03=1.35$
7. Hendrik Feldwehr: $59.63-59.15=0.48$
8. Giedrius Titenis: $58.96-59.24=$ (Negative... add a 12th person and don't consider this)
9. Christian Sprenger: $58.79-59.52=$ (Negative... add a 13th person and don't consider this)
10. Ryo Tateishi: $59.60-59.61=$ (Negative... add a 14th person and don't consider this)
11. Damir Dugonjic: $59.68-59.66=0.02$
12. Mark Gangloff: $59.76-59.67=0.09$
13. James Gibson: $1:00.37-59.68=0.69$
14. Johannes Neumann: $1:00.92-59.85= 1.07$

Average Add: 0.93

Women's 100 Breast 2008:

1. Leisel Jones: $1:05.09-1:05.17=$ (Negative... add a 11th person and don't consider this)
2. Yuliya Efimova: $1:04.36-1:06.08=$ (Negative... add a 12th person and don't consider this)
3. Rebecca Soni: $1:04.91-1:06.73=$ (Negative... add a 13th person and don't consider this)
4. Mirna Jukic: $1:08.53-1:07.06=1.47$
5. Tarnee White: $1:07.95-1:07.48=0.47$

6. Suzaan van Biljon: 1:07.54-1:07.55= (Negative... add a 14th person and don't consider this)
7. Megan Quann: 1:07.05-1:07.62= (Negative... add a 15th person and don't consider this)
8. Ye Sun: 1:07.08-1:07.72= (Negative... add a 16th person and don't consider this)
9. Joline Hostman: 1:07.85-1:07.91= (Negative... add a 17th person and don't consider this)
10. Jillian Tyler: 1:07.18-1:08.13= (Negative... add a 18th person and don't consider this)
11. Kate Haywood: 1:08.07-1:08.18= (Negative... add a 19th person and don't consider this)
12. Asami Kitagawa: 1:09.11-1:08.23=0.88
13. Huijia Chen: 1:07.98-1:08.24= (Negative... add a 20th person and don't consider this)
14. Annamay Pierse: 1:07.78-1:08.25= (Negative... add a 21st person and don't consider this)
15. Kristy Balfour: 1:07.67-1:08.30= (Negative... add a 22nd person and don't consider this)
16. Elise Matthysen: 1:10.09-1:08.37=1.72
17. Megumi Taneda: 1:09.91-1:08.45= 1.46
18. Elena Bogomazova: 1:08.04-1:08.63= (Negative... add a 23rd person and don't consider this)
19. Sara El Bekri: 1:08.21-1:08.66= (Negative... add a 24th person and don't consider this)
20. Sarah Poewe: 1:07.12-1:08.69= (Negative... add a 25th person and don't consider this)
21. Samantha Marshall: 1:07.04-1:08.72= (Negative... add a 26th person and don't consider this)
22. Hanna Westrin: 1:08.30-1:08.80= (Negative... add a 27th person and don't consider this)
23. Roberta Panara: 1:10.18-1:08.90=1.28
24. Alena Alekseeva: 1:11.21-1:08.91= (Huge Outlier... add a 28th person and don't consider this)
25. Yuliya Pidlisna: 1:08.73-1:08.97= (Negative... add a 29th person and don't consider this)
26. Mina Matsushima: 1:06.76-1:08.99= (Negative... add a 30th person and don't consider this)
27. Ekaterina Baklakova: 1:09.89-1:09.06= 0.83
28. Olga Detenyuk: 1:12.68-1:09.15= (Huge Outlier... add a 31st person and don't consider this)
29. Sara Nordenstam: 1:09.39-1:09.19= 0.20
30. Seul Ki Jung: 1:09.15-1:09.26= (Negative... add a 32nd person and don't consider this)
31. Xiaoyu Liu: 1:07.88-1:09.37= (Negative... add a 33rd person and don't consider this)
32. Sayuna Sugiyama: 1:08.83-1:09.49= (Negative... add a 34th person and don't consider this)
33. Laura Sogar: 1:07.41-1:09.50= (Negative... add a 35th person and don't consider this)
34. Sophie de Ronchi: 1:07.97-1:09.52= (Negative... add a 36th person and don't consider this)
35. Beata Kaminska: 1:08.54-1:09.71= (Negative... add a 37th person and don't consider this)
36. Chiara Boggiatto: 1:08.48-1:09.89= (Negative... add a 38th person and don't consider this)
37. Kasey Carlson: 1:08.81-1:09.94= (Negative... add a 39th person and don't consider this)

38. Anna Khlistunova: $1:07.27-1:09.95=$ (Negative... add a 40th person and don't consider this)

39. Diana Gomes: $1:10.43-1:09.96= 0.47$

40. Amanda Reason: $1:10.47-1:10.11=0.36$

Average Add: 0.91

Women's 100 Breast 2009:

1. Jessica Hardy: $1:05.18-1:04.45=0.73$

2. Rebecca Soni: $1:04.91-1:04.84=0.07$

3. Liping Ji: $1:06.52-1:05.32=1.20$

4. Yuliya Efimova: $1:04.36-1:05.41=$ (Negative... add a 11th person and don't consider this)

5. Annamay Pierse: $1:07.78-1:05.74=2.04$

6. Kasey Carlson: $1:08.81-1:05.75= 3.06$

7. Sarah Katsoulis: $1:06.78-1:05.86=0.92$

8. Rikke Pedersen: $1:05.93-1:06.38=$ (Negative... add a 12th person and don't consider this)

9. Mirna Jukic: $1:08.53-1:06.58=1.95$

10. Tarnee White: $1:07.95-1:06.91=1.04$

11. Sarah Poewe: $1:07.12-1:07.01= 0.11$

12. Chiara Boggiatto: $1:08.48-1:07.15= 1.33$

Average Add: 1.25

Men's 200 Breast 2008:

1. Kosuke Kitajima: $2:08.00-2:07.51= 0.49$

2. Daniel Gyurta: $2:07.23-2:08.68=$ (Negative... add a 11th person and don't consider this)

3. Michael Brown: $2:09.12-2:08.84= 0.28$

4. Brenton Rickard: $2:09.28-2:08.88= 0.40$

5. Hugues Duboscq: $2:11.03-2:08.94= 2.09$

6. Paolo Bossini: $2:11.20-2:08.98= 2.22$

7. Scott Spann: $2:12.15-2:09.08=3.07$

8. Loris Facci: $2:11.03-2:09.12=1.91$

9. Grigory Falko: $2:11.20-2:09.64=1.56$

10. Alexander Dale Oen: $2:09.68-2:09.74=$ (Negative... add a 12th person and don't consider this)

11. Neil Versfeld: $2:11.38-2:10.06=1.32$

12. Eric Shanteau: $2:09.28 -2:10.10=$ (Negative... add a 13th person and don't consider this)

13. Andrew Bree: $2:13.15-2:10.16=2.99$

Average Add: 1.63

Men's 200 Breast 2009:

1. Christian Sprenger: $2:08.63-2:07.31=1.32$

2. Eric Shanteau: $2:09.28-2:07.42= 1.86$

3. Daniel Gyurta: $2:07.23-2:07.64=$ (Negative... add a 11th person and don't consider this)

4. Giedrius Titenis: $2:08.93-2:07.80=1.13$
5. Brenton Rickard: $2:09.28-2:07.89=1.39$
6. Henrique Barbosa: $2:09.82-2:08.44=1.38$
7. Loris Facci: $2:11.03-2:08.50=2.53$
8. Edoardo Giorgetti: $2:09.73-2:08.63=1.10$
9. Igor Borysik: $2:11.64-2:08.73=2.91$
10. Hugues Duboscq: $2:11.03-2:09.00=2.03$
11. Kristopher Gilchrist: $2:10.16-2:09.01=1.15$

Average Add: 1.68

Women's 200 Breast 2008:

1. Rebecca Soni: $2:19.59-2:20.22=$ (Negative... add a 11th person and don't consider this)
2. Leisel Jones: $2:20.54-2:22.05=$ (Negative... add a 12th person and don't consider this)
3. Sara Nordenstam: $2:24.42-2:23.02=1.40$
4. Mirna Jukic: $2:25.83-2:23.24=2.59$
5. Yuliya Efimova: $2:19.41-2:23.76=$ (Negative... add a 13th person and don't consider this)
6. Annamay Pierse: $2:23.65-2:23.77=$ (Negative... add a 14th person and don't consider this)
7. Rie Kaneto: $2:19.65-2:24.62=$ (Negative... add a 15th person and don't consider this)
8. Megumi Taneda: $2:27.19-2:24.75=2.44$
9. Olga Detenyuk: $2:33.30-2:25.19=8.11$ (Huge Outlier... add 16th person and don't consider this)
10. Alena Alekseeva: $2:28.83-2:25.22=3.61$
11. Keiko Fukudome: $2:24.38-2:25.39=$ (Negative... add a 17th person and don't consider this)
12. Suzaan van Biljon: $2:23.21-2:25.51=$ (Negative... add a 18th person and don't consider this)
13. Sally Hunter: $2:23.33-2:25.54=$ (Negative... add a 19th person and don't consider this)
14. Seul ki Jung: $2:27.09-2:25.95=1.14$
15. Joline Hostman: $2:24.77-2:26.00=$ (Negative... add a 20th person and don't consider this)
16. Hui Qi: $2:22.99-2:26.16=$ (Negative... add a 21st person and don't consider this)
17. Laura Sogar: $2:23.54-2:26.41=$ (Negative... add a 22nd person and don't consider this)
18. Anne Poleska: $2:25.82-2:26.71=$ (Negative... add a 23rd person and don't consider this)
19. Elise Matthysen: $2:29.88-2:27.04=2.84$
20. Darae Jeong: $2:25.02-2:27.28=$ (Negative... add a 24th person and don't consider this)
21. Inna Kapishina: $2:31.02-2:27.34=3.68$
22. Amanda Beard: $2:22.44-2:27.70=$ (Negative... add a 25th person and don't consider this)
23. Yi Ting Siow: $2:30.64-2:27.80=2.84$
24. Yuliya Pidlisna: $2:28.42-2:27.81=0.61$
25. Kristy Balfour: $2:24.04-2:27.87=$ (Negative... add a 26th person and don't consider this)

26. Adriana Marmolejo: $2:33.05-2:28.10$ (Huge Outlier... add 27th person and don't consider this)

27. Ekaterina Baklakova: $2:31.63-2:28.42=3.21$

Average Add: 2.44

Women's 200 Breast 2009:

1. Annamay Pierse: $2:23.65-2:20.12=3.53$

2. Rebecca Soni: $2:19.59-2:20.93=$ (Negative... add a 11th person and don't consider this)

3. Nadja Higl: $2:25.56-2:21.62=3.94$

4. Mirna Jukic: $2:25.83-2:21.97=3.86$

5. Joline Hostman: $2:24.77-2:22.24=2.53$

6. Rie Kaneto: $2:19.65-2:22.32=$ (Negative... add a 12th person and don't consider this)

7. Martha McCabe: $2:23.16-2:22.75=0.41$

8. Nanaka Tamura: $2:26.61-2:22.82=3.79$

9. Keri Hehn: $2:26.72-2:23.20=3.52$

10. Ilaria Scarcella: $2:25.52-2:23.32=2.20$

11. Rikke Pedersen: $2:19.11-2:23.34=$ (Negative... add a 13th person and don't consider this)

12. Seul ki Jung: $2:27.09-2:24.20=2.89$

13. Darae Jeong: $2:25.02-2:25.00=0.02$

Average Add: 2.66

Men's 50 Fly 2008:

- No records in 2008, Analysis not needed

Men's 50 Fly 2009:

1. Rafael Munoz: $23.15-22.43=0.72$

2. Milorad Cavic: $23.41-22.67= 0.74$

3. Matthew Target: $23.11-22.73=0.38$

4. Federick Bousquet: $22.93-22.84=0.09$

5. Roland Schoeman: $22.96-22:90= 0.06$

6. Jakob Andkjaer: $23.56-22.93=0.63$

7. Nicholas Santos: $22.60-23.00=$ (Negative... add a 11th person and don't consider this)

8. Duje Draganja: $23.62-23.03=0.59$

9. Jason Dunford: $23.34-23.04= 0.30$

10. Albert Subirats: $23.57-23.05=0.52$

11. Andrew Lauterstein: $23.82-23.10=0.72$

Average Add: 0.48

Women's 50 Fly 2008:

- No records in 2008, Analysis not needed

Women's 50 Fly 2009:

1. Therese Alshammar: 25.46-25.07=0.39
2. Magdalena Veldhuis: 26.01-25.28=0.73
3. Marieke Guehrer: 25.99-25.48=0.51
4. Ingvild Nicoline Snildal: 26.16-25.53=0.63
5. Yafei Zhou: 26.67-25.57=1.10
6. Sarah Sjoestroem: 24.43-25.66= (Negative... add a 11th person and don't consider this)
7. Silvia Di Pietro: 25.78-25.84= (Negative... add a 12th person and don't consider this)
8. Daynara de Paula: 26.24-25.85=0.39
9. Jeanette Ottosen: 25.24-25.86= (Negative... add a 13th person and don't consider this)
10. Diane bui Duyet: 26.98-25.87=1.11
11. Hinkelien Schreuder: 26.14-25.94=0.20
12. Sviatlana Khakhlova: 26.57-26.00=0.57
13. Gabriella Silva: 26.42-26.02=0.40

Average Add: 0.60

Men's 100 Fly 2008:

1. Michael Phelps: 50.45-49.82=0.63
2. Milorad Cavic: 51.45-50.59= 0.86
3. Andriy Serdinov: 51.36-51.10=0.26
4. Andrew Lauterstein: 51.79-51.12=0.67
5. Ian Crocker: 50.40-51.13= (Negative... add a 11th person and don't consider this)
6. Jason Dunford: 51.59-51.14= 0.45
7. Peter Mankoc: 52.30-51.24=1.06
8. Takuro Fujii: 51.58-51.50=0.08
9. Ryan Pini: 52.10-51.62=0.48
10. Feng Shi: 52.64-51.68=0.96
11. Albert Subirats: 51.81-51.71=0.10

Average Add: 0.56

Men's 100 Fly 2009:

1. Michael Phelps: -49.82= (Wore the LZR Racer so belongs in 2008 category, add 11th person and don't consider this)
2. Milorad Cavic: 51.45-49.95= 1.50
3. Rafael Munoz: 52.48-50.41=2.07
4. Albert Subirats: 51.81-50.65=1.16
5. Jason Dunford: 51.59-50.78= 0.81
6. Andrew Lauterstein: 51.79-50.85=0.94
7. Tyler McGill: 51.26-50.90=0.36
8. Kouhei Kawamoto: 52.25-51.00=1.25
9. Gabriel Mangabeira: 52.33-51.02=1.31
10. Ivan Lender: 51.95-51.22=0.73
11. Benjamin Starke: 51.65-51.22=0.43

Average Add: 1.06

Women's 100 Fly 2008:

1. Libby Lenton: $57.15-56.73=0.42$
2. Christine Magnuson: $57.32-57.08=0.24$
3. Jess Schipper: $57.23-57.25=$ (Negative... add a 11th person and don't consider this)
4. Tao Li: $58.18-57.54=0.64$
5. Yafei Zhou: $58.20-57.68=0.52$
6. Jemma Lowe: $57.43-57.78=$ (Negative... add a 12th person and don't consider this)
7. Gabriella Silva: $59.12-58.00=1.12$
8. Elaine Breeden: $58.18-58.06=0.12$
9. Ilaria Bianchi: $57.22-58.12=$ (Negative... add a 13th person and don't consider this)
10. Igne Dekker: $57.32-58.13=$ (Negative... add a 14th person and don't consider this)
11. Lize-Marie Retief: $59.59-58.20=1.39$
12. Aurore Mongel: $58.79-58.30=0.39$
13. Natalia Soutiagina: $58.72-58.32=0.40$
14. Sarah Sjoestroem: $55.48-58.38=$ (Negative... add a 15th person and don't consider this)
15. Eszter Dara: $58.79-58.39=0.40$

Average Add: 0.56

Women's 100 Fly 2009:

1. Sarah Sjoestroem: $55.48-56.06=$ (Negative... add a 11th person and don't consider this)
2. Zige Liu: $57.39-56.07=1.32$
3. Jess Schipper: $57.23-56.23=1.00$
4. Liuyang Jiao: $57.71-56.86=0.85$
5. Aurore Mongel: $58.79-56.89=1.90$
6. Gabriella Silva: $59.12-56.94= 2.18$
7. Dana Vollmer: $55.98-56.94=$ (Negative... add a 12th person and don't consider this)
8. Ingvild Nicoline Snildal: $58.32-56.96=1.36$
9. Yafei Zhou: $58.20-57.34=0.86$
10. Magdalena Veldhuis: $59.20-57.38=1.82$
11. Christine Magnuson: $57.32-57.48=$ (Negative... add a 13th person and don't consider this)
12. Jeanette Ottesen: $56.51-57.58$ (Negative... add a 14th person and don't consider this)
13. Daynara de Paula: $57.92-57.68=0.24$
14. Felicity Galvez: $58.20-57.71=0.49$

Average Add: 1.20

Men's 200 Fly 2008:

1. Michael Phelps: $1:52.09-1:51.51=0.58$
2. Laszlo Cseh: $1:52.91-1:52.70=0.21$
3. Takeshi Matsuda: $1:53.21-1:52.97=0.24$

4. Nikolay Skvortsov: $1:55.22-1:54.31=0.91$
5. Moss Burmester: $1:55.35-1:54.35=1.00$
6. Peng Wu: $1:54.67-1:54.35=0.32$
7. Pawel Korzeniowski: $1:55.00-1:54.38=0.62$
8. Kaio Marcio Almeida: $1:55.22-1:54.65=0.57$
9. Gil Stovall: $1:57.13-1:55.36=1.77$
10. Michael Rock: $1:56.26-1:55.55=0.71$

Average Add: 0.69

Men's 200 Fly 2009:

- No records set in the Full body poly suits so no need for analysis

Women's 200 Fly 2008:

1. Zige Liu: $2:04.40-2:04.18=0.22$
2. Liuyang Jiao: $2:04.06-2:04.72=$ (Negative... add a 11th person and don't consider this)
3. Jess Schipper: $2:05.40-2:06.26=$ (Negative... add a 12th person and don't consider this)
4. Aurore Mongel: $2:08.87-2:06.49=2.38$
5. Yuko Nakanishi: $2:06.52-2:06.62=$ (Negative... add a 13th person and don't consider this)
6. Emese Kovacs: $2:08.55-2:06.71=1.84$
7. Otylia Jedrzejczak: $2:05.61-2:06.78=$ (Negative... add a 14th person and don't consider this)
8. Kathleen Hersey: $2:05.78-2:06.96=$ (Negative... add a 15th person and don't consider this)
9. Natsumi Hoshi: $2:04.69-2:07.02=$ (Negative... add a 16th person and don't consider this)
10. Sara Isakovic: $2:08.69-2:07.05=1.64$
11. Elaine Breedon: $2:08.14-2:07.57=0.57$
12. Micha Kathrine Ostergaard Jensen: $NA-2:07.77=$ (Couldn't find a time... add a 17th person and don't consider this)
13. Jemma Lowe: $2:05.36-2:07.87=$ (Negative... add a 18th person and don't consider this)
14. Natsuki Akiyama: $NA-2:08.10=$ (Couldn't find a time... add a 19th person and don't consider this)
15. Audrey Lacroix: $2:06.83-2:08.54=$ (Negative... add a 20th person and don't consider this)
16. Samantha Hamill: $2:07.75-2:08.83=$ (Negative... add a 21st person and don't consider this)
17. Petra Granlund: $2:11.11-2:08.97=2.14$
18. Ellen Gandy: $2:05.59-2:08.98=$ (Negative... add a 22nd person and don't consider this)
19. Mireia Belmonte Garcia: $2:04.78-2:09.32=$ (Negative... add a 23rd person and don't consider this)
20. Nina Schiffer: $2:11.98-2:09.36=2.62$
21. Kathryn Meaklim: $2:14.77-2:09.41= 5.36$ (Huge Outlier... add 24th person and don't consider this)

22. Yui Miyamoto: NA-2:09.41= (Couldn't find a time... add a 25th person and don't consider this)
23. Yana Martynova: 2:09.90-2:09.52=0.38
24. Nina Dittrich: 2:12.24-2:09.85=2.39
25. Beatrix Bousevicz: 2:09.14-2:10.00= (Negative... add a 26th person and don't consider this)
26. Sara Oliveira: 2:10.96-2:10.14=0.82

Average Add: 1.50

Women's 200 Fly 2009:

1. Zige Liu: 2:04.40-2:01.81=2.59
2. Jess Schipper: 2:05.40-2:03.41=1.99
3. Mary Descenza: 2:08.38-2:04.14=4.24
4. Katinka Hosszu: 2:05.59-2:04.27=1.32
5. Liuyang Jiao: 2:04.06-2:04.50= (Negative... add a 11th person and don't consider this)
6. Ellen Gandy: 2:05.59-2:04.83= 0.76
7. Aurore Mongel: 2:08.87-2:05.09=3.78
8. Audrey LaCroix: 2:06.83-2:05.95=0.88
9. Samantha Hamill: 2:07.75-2:05.99=1.76
10. Annika Mehlhorn: 2:06.97-2:06.45=0.52
11. Caterina Giacchetti: 2:08.87-2:06.50=2.37

Average Add: 2.02

Men's 200 IM 2008:

1. Ryan Lochte: 1:54.00-1:54.10= (Negative... add a 11th person and don't consider this)
2. Michael Phelps: 1:54.16-1:54.23= (Negative... add a 12th person and don't consider this)
3. Laszlo Cseh: 1:56.22-1:56.52= (Negative... add a 13th person and don't consider this)
4. Thiago Pereira: 1:56.30-1:58.06= (Negative... add a 14th person and don't consider this)
5. Ken Takakuwa: 1:58.06-1:58.22= (Negative... add a 15th person and don't consider this)
6. Bradley Ally: 2:00.03-1:58.57=1.46
7. James Goddard: 1:57.76-1:58.63= (Negative... add a 16th person and don't consider this)
8. Alessio Boggiatto: 1:59.83-1:58.80=1.03
9. Keith Beavers: 2:01.36-1:59.19=2.17
10. Takuro Fujii: 2:00.38-1:59.19=1.19
11. Darian Townsend: 1:59.09-1:59.22 (Negative... add a 17th person and don't consider this)
12. Liam Tancock: NA-1:59.42= (Couldn't find a time... add a 18th person and don't consider this)
13. Vytautas Janusaitis: 1:59.43-1:59.63= (Negative... add a 19th person and don't consider this)
14. Dinko Jukic: 2:00.65-1:59.65=1.00

15. Gal Nevo: 1:59.17-1:59.66= (Negative... add a 20th person and don't consider this)
16. Leith Brodie: 1:59.60-1:59.96= (Negative... add a 21st person and don't consider this)
17. Tamas Kerekjarto: 1:59.51-2:00.32= (Negative... add a 22nd person and don't consider this)
18. Diogo Carvalho: 1:59.39-2:00.40= (Negative... add a 23rd person and don't consider this)
19. Brian Johns: 1:59.45-2:00.66= (Negative... add a 24th person and don't consider this)
20. Mike Alexandrov: 2:01.80-2:00.70=1.10
21. Xavier Mohammed: 1:59.29-2:00.73= (Negative... add a 25th person and don't consider this)
22. Dean Kent: 2:00.30-2:01.12= (Negative... add a 26th person and don't consider this)
23. Alexander Tikhonov: 2:00.14-2:01.21= (Negative... add a 27th person and don't consider this)
24. Ioannis Kokkodis: 2:01.47-2:01.22=0.25
25. Jeremy Knowles: 2:02.85-2:01.35=1.50
26. Gard Kvale: 2:03.35-2:01.52=1.83
27. Lukasz Wojt: 2:00.32-2:01.54= (Negative... add a 28th person and don't consider this)
28. Miguel Molina: 2:03.73-2:01.61=2.12

Average Add: 1.37

Men's 200 IM 2009:

- No records set in the Full body poly suits so no need for analysis

Women's 200 IM 2008:

1. Stephanie Rice: 2:09.38-2:08.45=0.93
2. Kristy Coventry: 2:10.51-2:08.59=1.92
3. Natalie Coughlin: 2:12.44-2:10.34=2.10
4. Katie Hoff: 2:10.13-2:10.68= (Negative... add a 11th person and don't consider this)
5. Mireia Belmonte Garcia: 2:09.45-2:11.16= (Negative... add a 12th person and don't consider this)
6. Alicia Coutts: 2:08.15-2:11.43= (Negative... add a 13th person and don't consider this)
7. Asami Kitagawa: 2:13.82-2:11.56=2.26
8. Hannah Miley: 2:10.19-2:11.72= (Negative... add a 14th person and don't consider this)
9. Julie Hjorth-Hansen: 2:13.14-2:11.99=1.15
10. Julia Wilkinson: 2:11.32-2:12.03= (Negative... add a 15th person and don't consider this)
11. Katarzyna Baranowska: 2:13.36-2:12.13=1.23
12. Camille Muffat: 2:10.92-2:12.16= (Negative... add a 16th person and don't consider this)
13. Evelin Verraszto: 2:10.10-2:12.18= (Negative... add a 17th person and don't consider this)
14. Jiaying Li: 2:12.69-2:12.53=0.16
15. Keri-Anne Payne: 2:13.50-2:12.78=0.72
16. Svetlana Karpeeva: 2:14.37-2:12.94=1.43
17. Dagny Knutson: 2:13.73-2:12.97=0.76

Average Add: 1.27

Women's 200 IM 2009:

1. Ariana Kukors: $2:09.12-2:06.15=2.97$
2. Stephanie Rice: $2:09.38-2:07.03=2.35$
3. Katinka Hosszu: $2:06.12-2:07.46=$ (Negative... add a 11th person and don't consider this)
4. Kristy Coventry: $2:10.51-2:08.94=1.57$
5. Camille Muffat: $2:10.92-2:09.37=1.55$
6. Hannah Miley: $2:10.19-2:09.46= 0.73$
7. Julie Hjorth-Hansen: $2:13.14-2:09.73=3.41$
8. Evelin Verraszto: $2:10.10-2:09.91=0.19$
9. Julia Smit: $2:11.55-2:10.29=1.26$
10. Jing Liu: $2:14.39-2:11.05=3.34$
11. Emily Seebohm: $2:09.93-2:11.31=$ (Negative... add a 12th person and don't consider this)
12. Daria Belyakina: $2:13.41-2:11.73=1.68$

Average Add: 1.91

Men's 400 IM 2008:

1. Michael Phelps: $4:06.22-4:03.84=2.38$
2. Laszlo Cseh: $4:09.63-4:06.16=3.47$
3. Ryan Lochte: $4:05.18-4:08.09=$ (Negative... add a 11th person and don't consider this)
4. Luca Marin: $4:09.88-4:10.22=$ (Negative... add a 12th person and don't consider this)
5. Gergo Kis: $4:14.76-4:10.66=4.10$
6. Alessio Boggiatto: $4:12.28-4:10.68=1.60$
7. Brian Johns: $4:15.54-4:11.41=4.13$
8. Thiago Pereira: $4:08.86-4:11.74=$ (Negative... add a 13th person and don't consider this)
9. Keith Beavers: $4:19.01-4:12.75=6.26$
10. Bradley Ally: $4:18.80-4:14.01=4.79$
11. Gal Nevo: $4:14.77-4:14.03=3.74$
12. Riaan Schoeman: $4:15.60-4:14.09=1.51$
13. Andrey Krylov: $4:18.15-4:14.55=3.60$

Average Add: 3.56

Men's 400 IM 2009:

- No records in 2009, Analysis not needed

Women's 400 IM 2008:

1. Stephanie Rice: $4:33.45-4:29.45=4.00$
2. Kristy Coventry: $4:37.21-4:29.89=7.32$
3. Katie Hoff: $4:32.89-4:31.12=1.77$

4. Elizabeth Beisel: $4:31.27-4:34.24=$ (Negative... add a 11th person and don't consider this)
5. Alessia Filippi: $4:35.80-4:34.34=1.46$
6. Yana Martynova: $4:38.69-4:36.25=2.44$
7. Xuanxu Li: $4:32.91-4:36.35=$ (Negative... add a 12th person and don't consider this)
8. Hannah Miley: $4:31.76-4:36.56=$ (Negative... add a 13th person and don't consider this)
9. Katarzyna Baranowska: $4:40.02-4:36.95=3.07$
10. Kathryn Meaklim: $4:37.70-4:37.11=0.59$
11. Maiko Fujino: $4:38.55-4:37.35=1.20$
12. Katinka Hosszu: $4:26.36-4:37.43=$ (Negative... add a 14th person and don't consider this)
13. Zsuzsanna Jakabos: $4:34.50-4:37.86=$ (Negative... add a 15th person and don't consider this)
14. Mireia Belmonte Garcia: $4:31.21-4:37.91=$ (Negative... add a 16th person and don't consider this)
15. Keri-Anne Payne: $4:41.07-4:38.69=2.38$
16. Anja Klinar: $4:38.13-4:38.90=$ (Negative... add a 15th person and don't consider this)
17. Helen Norfolk: $4:44.79-4:39.07=5.72$

Average Add: 3.00

Women's 400 IM 2009:

- No records in 2009, Analysis not needed