

Bridging the Science-Practice Gap: Strategies for Youth Coaches



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My Background

Athlete → Coach → Researcher



Plan of Talk

- Evidence based practice (EBP)
- Strengths and Weaknesses of:
Personal experience/expertise
and Research
- 6 strategies to become a better
EBP coach

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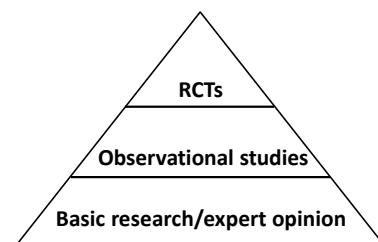
EBP – Background

- In 1990's medical professionals developed
EBM.
- Main outcomes:
 - Systems to **rank** the quality of evidence.
 - Strategies to **integrate** knowledge
when making decisions.

Sackett et al., 1996

EBP – Background

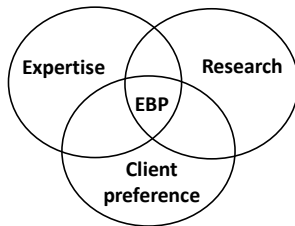
Ranking of knowledge:



Sackett et al., 1996

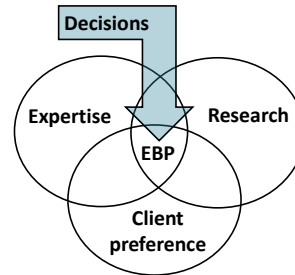
EBP – Background

Integration of knowledge:



Sackett et al., 1996

EBP – Background



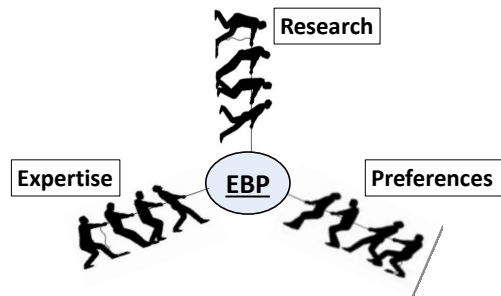
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EBP – Background

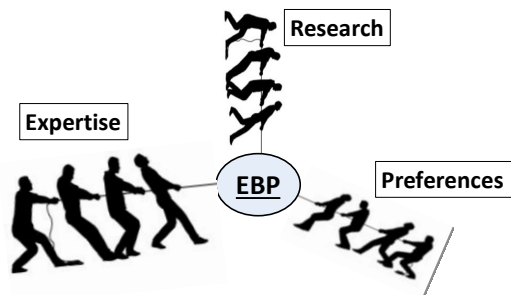
• Examples of decisions:

- Number of sets/reps
- Order of exercises
- Rest periods
- Timing of feedback

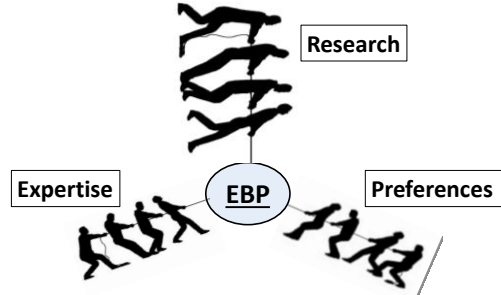
EBP – Analogy




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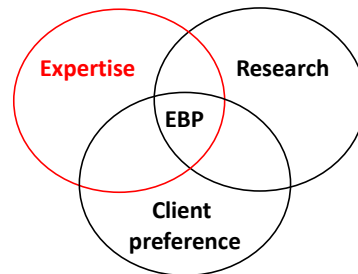
EBP – Analogy



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Expertise/Expertise

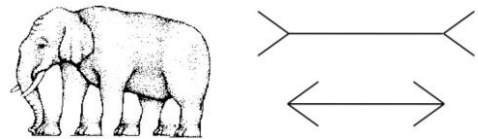


Expertise/Expertise – Strengths

- Deep knowledge of a specific sport domain.
- Experience with complex individuals rather than statistical entities.
- Account for MANY variables when making decisions (mood, sleep, game schedules, etc).

Expertise/Expertise – Weaknesses

- What we see is not always an accurate representation of reality.



Expertise/Expertise – Weaknesses

- We are meaning-making machines. We create causal relationships even when they don't exist.



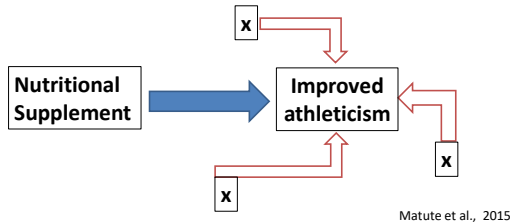
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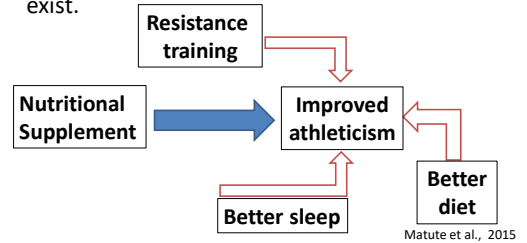
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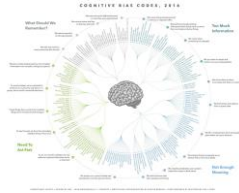
Expertise/Expertise – Weaknesses

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Expertise/Expertise – Weaknesses

- We suffer from a number of cognitive biases:
 - Confirmation bias
 - Appeal to authority
 - Survival bias
 - and many more...



- Trust me. I know what I am talking about.

Expertise/Expertise – Weaknesses

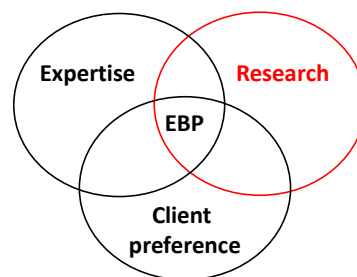
- We rely too heavily on anecdotes which may be misleading.



Expertise/Expertise – Conclusion

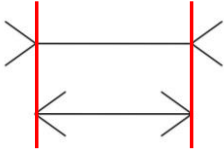
- **Pros:**
 - Rich, complex, domain specific knowledge, concerning unique individuals with unique requirements.
- **Cons:**
 - Biases, illusions, assume relationships when absent, and reliance on anecdotes.

Research



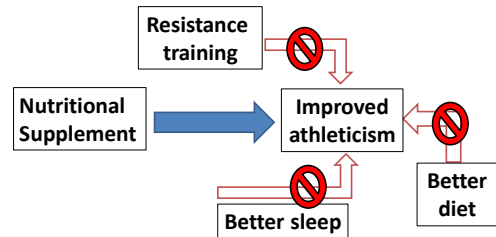
Research – Strengths

- The scientific method overcomes many of the personal experience weaknesses.
- Key strength: overcome biases and illusions.



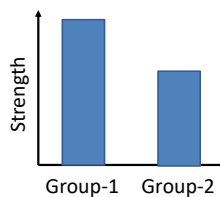
Research – Strengths

- Allows to establish cause-effect relationships.



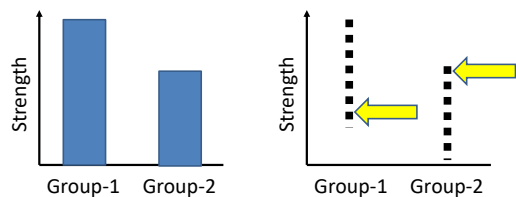
Research – Strengths

- Overcomes the danger of relying on anecdotes. Very informative at the **group level**.



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Research – Weaknesses

- Biased!
- Slow process... We need answers now!
- Not always relevant to real life problems.
- Time consuming & requires background (e.g., statistics).



Research – Conclusion

- **Pros:**
 - Can overcome biases, systematic, larger samples, can establish cause-effect relationships, can cancel confounders.
- **Cons:**
 - Biased, slow, not relevant, complex, requires time and background knowledge.

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Bridging the Gap: What's to come

- Effective strategies that will assist you:
 - Overcome biases & mental shortcuts.
 - Better understand & integrate research in your work.
- Some may require time.
(Yes, I am mindful of how busy you are.)

Strategy 1 – Study your enemies

- Read about cognitive biases:
 - It is fascinating.
 - It reduces their negative impact.
 - Use cheat-sheets.
(See my recommendations.)



Croskerry, 2003

Strategy 2 – “The” question

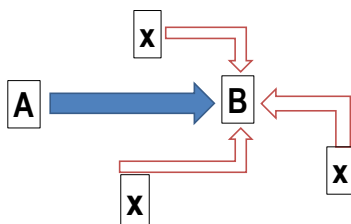
- An effective technique to overcome a family of biases:
- Frequently ask yourself the following question:

“Are there alternative explanations for the observed effect?”

Morewedge et al., 2015

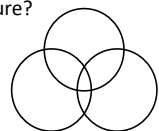
Strategy 2 – “The” question

“Are there alternative explanations for the observed effect?”



Strategy 3 – Reflection

- Honest reflection:
 - Why did I make this coaching decision?
 - Is it defensible?
 - Can I explain it using the EBP figure?
 - What if I am wrong?



Büyükkurt and Büyükkurt, 1991

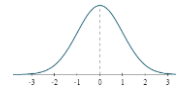
Strategy 4 – Statistics

- It is crucial to develop basic statistical/probabilistic thinking abilities.
- Coaching = uncertainty. Statistical reasoning is helpful to deal with uncertainty.
- Good news: not difficult or time consuming, but very worthwhile.



Strategy 4 – Statistics

- My general recommendation for busy coaches is to learn/refresh their knowledge of:
 - Descriptive statistics.
 - Basic probability.
- Many free, short, excellent courses on Youtube, Coursera, EDX, etc. See my recommendations.



Strategy 5 – Keeping up

- Understanding and integrating research outputs into your work is important.
- But how do you keep up?
- **Research digests & podcasts.** Some are excellent. (And yes, I added a number of recommendations.)



MASS

Strategy 5 – Keeping up

- Read review papers. Many don't require an extensive background to understand. (*Sports Medicine* publishes excellent ones)
- Follow guidelines of respected organizations. (e.g., NSCA, NASM, ACSM, BASES)



Strategy 6 – Connect

- Take initiative & contact a sport scientist.
- Most will be happy to help & share knowledge.
- **Such relationships are what we all need more of. Be the change. Make the first move.**
- Try to foster relationships in which questions are answered together.

Thank you for your time!