Introduction

- Insulin (or “slin”) use for bodybuilding was first noted in academic literature in the 1990s.
- Literature to date has focused on the outsider perspective and emphasized the dangers:
  - commentaries and letters to the editor (e.g. Dawson and Harrison 1997, Elkin et al. 1997, Green 2004),
  - and case reports (e.g. Willey 1997, Evans and Lynch 2003, Petrovic et al. 2015)
  - Surveys:
    - focus on insulin use as problem, to the neglect of insulin use as practice (e.g. Cohen et al. 2007, Ip et al. 2011) and have only yielded limited information on dosage, types of insulin used and timing of administration.
- There is a paucity of data on the practice of insulin use and we have little understanding of the social reasons for taking insulin (Graham et al. 2008).
Methods

• prioritises the consumers’ perspective through an ethnographic approach.
• insulin as having a social life:
  • the social lives of drugs* is an approach that recognizes that drugs take on meaning through social interactions, and also have implications for these interactions (Whyte et al. 2002).
  • allows the consideration of drug use as not simply occurring within a cultural context, but as shaping cultural landscapes (Keane 2005).
• immersed myself in image and performance enhancing drug using communities online and conducted participant observation.


Data

• Notes on 25 YouTube videos totaling almost 6 hours.
• Discussions of insulin from websites, social media and forums.
• Interviews with 18 former or current users of insulin:
  • face-to-face or via phone or video-conferencing, 40 minutes - 2.5 hours in duration (average 79 mins) and were transcribed verbatim and analysed using NVivo 11.
• Participants:
  • 2 pro bodybuilders, 3 amateur bodybuilding competitors, 2 former amateur competitors, 1 occupational consumer, and 10 recreational bodybuilders.
  • aged 21-56 years
  • Australia (n=9), USA (4), UK (1), Germany (1), Canada (1), Vietnam (1) and India (1).
  • included 4 community experts with a collective reach of over 1 million bodybuilders.
A brief history of insulin in bodybuilding

• diabetic bodybuilder: Tim Belknap early 1980s
• Not popularized until 1990s – Milos Sarcev and Dave Palumbo

History continued

• 1990s – arrival of the “mass monsters” whose size commonly attributed to human growth hormone and insulin
• all or most pro bodybuilders today use insulin
• “Sexy” drug which is cheap and accessible
• Supplements: “Slin” and “SlinMax”
The place of insulin in the bodybuilders’ arsenal

• aid to recovery, and as “the most anabolic hormone”.
• no scientific evidence that insulin is anabolic in healthy adults (Anderson et al., 2018).
• most effective in combination with other compounds:
  • All participants used insulin in combination with anabolic steroids
  • some also used human growth hormone.
• Insulin, human growth hormone and anabolic steroids (act synergistically) =
  • ‘the anabolic triumvirate’ (Jerry Brainum, Peptides and how they work video),
• Surpassing limits:
  • Natural plateau surpassed using anabolic androgenic steroids.
  • Steroid plateau surpassed by using insulin and/or human growth hormone.
• Insulin as harm minimization:
  • used to counter the insulin resistance caused by growth hormone use.
  • can protect bodybuilders from developing diabetes.
  • can use less steroids?

Risks of insulin use

• hypoglycemia and fat gain
• ‘very dangerous’ & ‘very safe’
• safer than oral steroids and DNP (2,4-Dinitrophenol).
• Only dangerous for the uneducated.
• Two high profile bodybuilding deaths:
  • initially attributed to insulin
  • autopsies did not confirm this.
• Zero bodybuilding deaths officially linked to insulin use
  • failure/inability to test?
• cited von Mach and colleagues (2004):
  • study of insulin overdose
  • even intentional insulin overdoses rarely result in death.
• Bodybuilders frequently find humour in the disconnect between bodybuilder and mainstream risk perceptions (Underwood 2017).
  • “Quick update before bed: still not dead 😇”.

Dallas McCaver 9.4.91 - 22.8.17

Rich Piana 26.9.70 – 25.8.17
Practice

• balancing act:
  • use enough insulin to maximise the utilisation of the nutrients consumed
  • (and therefore develop maximum muscle but not gain unnecessary fat)
  • but not overdoing insulin which would result in hypoglycemia.
  • achieved by using appropriate insulin doses matched to the individual’s diet:
    • 1) macronutrients (particularly carbohydrates)
    • 2) timing of meals in relation to insulin administration.

Practice continued

• However, there is great debate regarding:
  • appropriate doses
  • timing of administration
  • insulin to macronutrient ratio.

• individual and should be determined through experimentation:
  • start at low levels (e.g. 3-5 IU), increase by small amounts (1-2 IU) daily until signs of hypo and then “dial back” (i.e. reduce) the dose.
  • While some participants did this “by feel”, most used a glucometer to measure blood glucose levels.
  • As a result the variety of protocols differ greatly.
  • Some by feel, most by glucometer.

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<thead>
<tr>
<th>Protocols</th>
<th>Min.</th>
<th>Max.</th>
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<tbody>
<tr>
<td>Dose per day (IU)</td>
<td>4</td>
<td>360</td>
</tr>
<tr>
<td>Carbohydrates (grams) to Insulin (IU) ratio</td>
<td>5:1</td>
<td>20:1</td>
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<tr>
<td>Times used per day</td>
<td>1</td>
<td>7</td>
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</table>

<table>
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<tr>
<th>Type (sometimes used in combination)</th>
<th>No. of users</th>
</tr>
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<tbody>
<tr>
<td>Rapid (e.g. Novolog, NovoRapid)</td>
<td>16</td>
</tr>
<tr>
<td>Short (e.g. Novolin R, Humulin R)</td>
<td>2</td>
</tr>
<tr>
<td>Long (e.g. Lantus)</td>
<td>5</td>
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Experience

- aid to recovery
- muscular increases of 3-6 kg per week (although these claims were disputed by some participants).
- unlike other bodybuilding compounds, can be felt.
  - “Insane pumps”. The pump:
    - temporary swelling of the muscle with training
    - likened to a sexual climax, and is described as addictive.
    - deeply satisfying as it allows the individual to see themselves with larger muscles.
    - can result in a permanent state of dissatisfaction.

“Insane pumps’” ... coming is, as having sex with a woman and coming”.
Arnold Schwarzenegger, *Pumping Iron*.

Experience continued - Hypoglycemia

- Every participant had experienced “going hypo” (hypoglycemia):
  - shaking, sweating, light-headedness, lethargy and extreme hunger.
- Only one participant swore off insulin after a hypo.
- felt confident in their ability to address the symptoms before they became problematic.
- Some deliberately pushed the limits by reducing food intake, or having no food with their insulin.
- Only 1 life-threatening hypoglycemic episode whilst driving at high speed on a motorway.
Discussion

• Identified the decision making and experimentation process that informed the choice of dose.

• Motivations for insulin use:
  • Anabolic
  • overcoming muscular plateaus
  • harm minimisation.
  • psychological consequences:
    • the pump
    • can be felt.

• Social lives = meanings insulin acquires + how it changed the culture of bodybuilding (e.g. mass monsters).

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<tr>
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<th>Past research</th>
<th>My study</th>
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<tbody>
<tr>
<td>Frequency</td>
<td>1 - 2</td>
<td>1 - 7</td>
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<tr>
<td></td>
<td>[Dawson and Harrison 1997, Ip et al. 2012]</td>
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<tr>
<td>Doses</td>
<td>10 - 20 IU</td>
<td>4 – 360 IU</td>
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<tr>
<td></td>
<td>[Dawson and Harrison 1997, Evans and Lynch 2003]</td>
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Discussion continued

• moved beyond insulin users as risk takers (e.g. Evans and Lynch 2003, Ip et al. 2012), and allowed an appreciation of the harm minimisation strategies put into place in bodybuilding communities.

• Harm minimization strategies
  • Past suggestions focused on prevention of use through legislation (e.g. Elkin et al. 1997, Ip et al. 2012, Petrovic et al. 2015).
    • failing and will continue to do so.
  • It is time to shift focus to increasing understanding of consumers, and providing support and education for consumers.
  • It is only through working with consumers that we will prevent the potential harms of insulin use.
  • It is hoped that this paper is a first step in this direction.