

Dr Chris Ward
Manchester Royal Infirmary

Fourth Joint Conference *of the British HIV Association with the British Association for Sexual Health and HIV*
Edinburgh International Conference Centre ♦ 17-20 April 2018

Overheard at the gym: a clinician's overview of interactions/toxicities of commonly used drugs:

Non steroids

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Conflict of interests: none declared

A large collection of various sports nutrition products, including protein powders, pre-workout supplements, and energy drinks, displayed on a reflective surface. The products are arranged in a dense, overlapping group, showcasing a wide variety of brands and formulations. Visible labels include 'PRO GAINER', 'PM', 'VAPO', 'TEST', 'PUMP-HD', 'B4', 'NITRO TECH', 'CELL TECH', 'SYNTH-6', 'DROXYL', 'CELL MASS', 'MUSCLE MILK GAINER', 'SHRED MATRIX', 'SCULLION', 'ISO-100', 'AMINO', 'WHEY', 'ALPHA AMINO', 'NITE-BURN', 'PLATINUM D-GLUTAMINE', 'ULK', 'B', 'LPO 6', 'EXTREME', 'VAPOR', 'NO-XPLODE', and 'AMINO ENERGY CHILIS'. The products come in various container types, including tubs, jars, and bottles, with labels featuring different colors and designs. The entire display is set against a dark background, with the products' reflections visible on the glossy surface below them.

Aims and Objectives

- Why is going to the gym important?
- Bulking
- Cutting
- Strength and stamina
- Interactions
- Monitoring

Benefits of exercise

- Improves
 - Heart and lung endurance
 - Energy levels
 - Bone strength
 - Appetite
 - Sleep
- Reduces
 - Stress
 - LDL cholesterol/triglycerides
 - Lipodystrophy
 - Risk of Type II diabetes



Benefits of exercise

[ISRN AIDS](#). 2012; 2012: 145127.

Published online 2012 Dec 11. doi: [10.5402/2012/145127](#)

Moderate-Intensity Exercise Improves Body Composition and Physiological Markers of Stress in HIV-Infected Patients: A Systematic Review and Meta-Analysis

[Wesley David Dudgeon](#), ^{1,*} [Jason Reed Jagers](#), ² [Kenneth Doyle Phillips](#), ³ [Stephanie E. Burgess](#), ⁴ [George William Lyerly](#), ⁵ [John Mark Davis](#), ² and ¹ [David A. Asch](#)

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RESEARCH ARTICLE

Effects of Combined Aerobic and Resistance Exercise on Exercise Capacity, Muscle Strength and Quality of Life in HIV-Infected Patients: A Systematic Review and Meta-Analysis

[Mansueto Gomes Neto](#) , [Cristiano Sena Conceição](#), [Vitor Oliveira Carvalho](#), [Carlos Brites](#)

Published: September 17, 2015 • <https://doi.org/10.1371/journal.pone.0138066>

[AIDS and Behavior](#)

August 2015, Volume 19, [Issue 8](#), pp 1470–1477 | [Cite as](#)

Physical Activity is Associated with Improved Health-Related Quality of Life and Everyday Functioning Among HIV-Infected Patients: A Systematic Review and Meta-Analysis

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[Scott L. Letendre](#), [Steven Paul Woods](#), [Igor Grant](#), [Dilip V. Jeste](#), [David J. M. Williams](#)



**AIDS & Clinical
Research**

[Maduagwu et al., J AIDS Clin Res 2015, 6:10](#)
<http://dx.doi.org/10.4172/2155-6113.1000508>

Research Article

Open Access

Effect of Aerobic Exercise on CD4 Cell Count and Lipid Profile of HIV Infected Persons in North Eastern Nigeria

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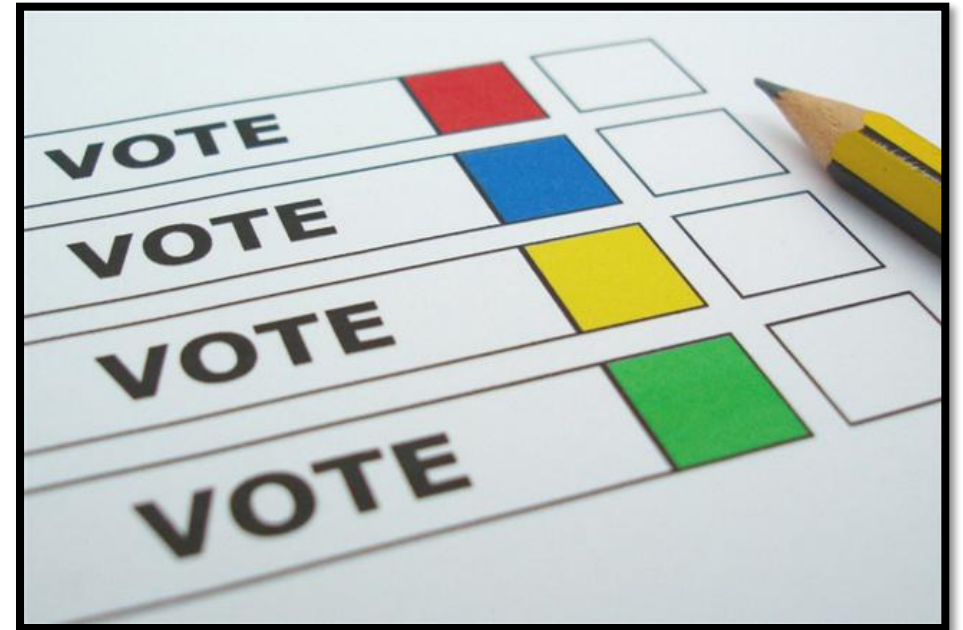
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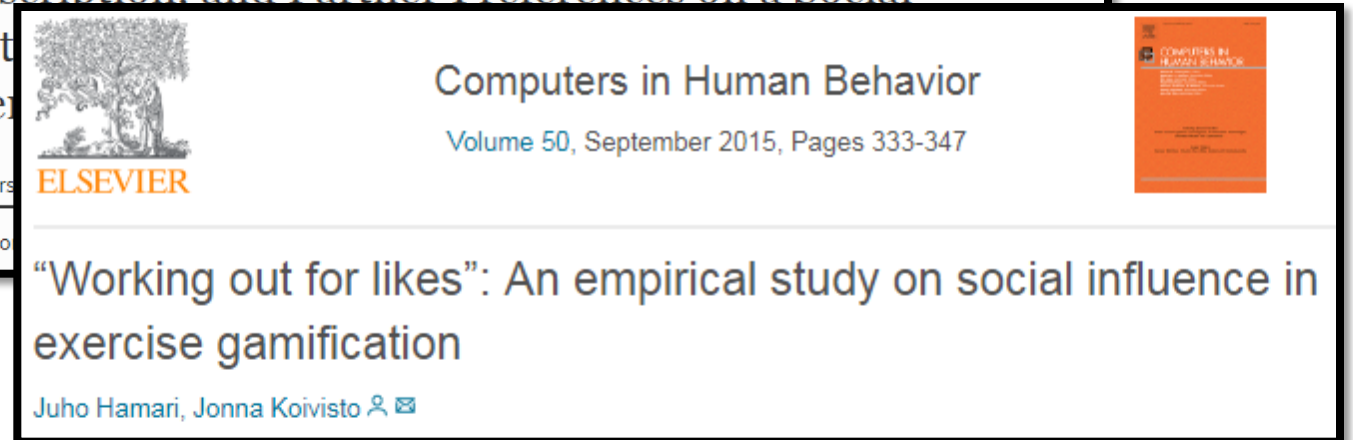
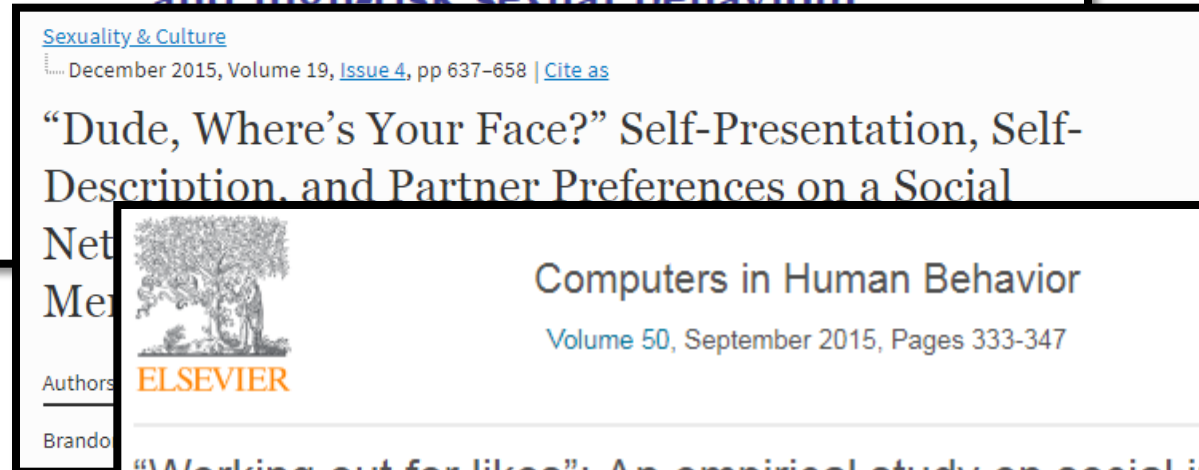
Why do people exercise?

1. Lose weight
2. Improve strength
3. Improve stamina and cardiovascular health
4. Reduce risk of long term health conditions
5. Aesthetics



Why do people exercise?

- Aesthetics
- Weight loss
- Sex/partner factors
- Social influence/validation



Bulking

- Aim
 - Gain Lean muscle
 - Minimise fat gain
 - Changes in food intake
 - Little aerobic exercise
- Supplements
 - Steroids
 - Whey proteins/BCAA
 - Creatine
 - Multivitamins
 - Testosterone



Bulking supplements

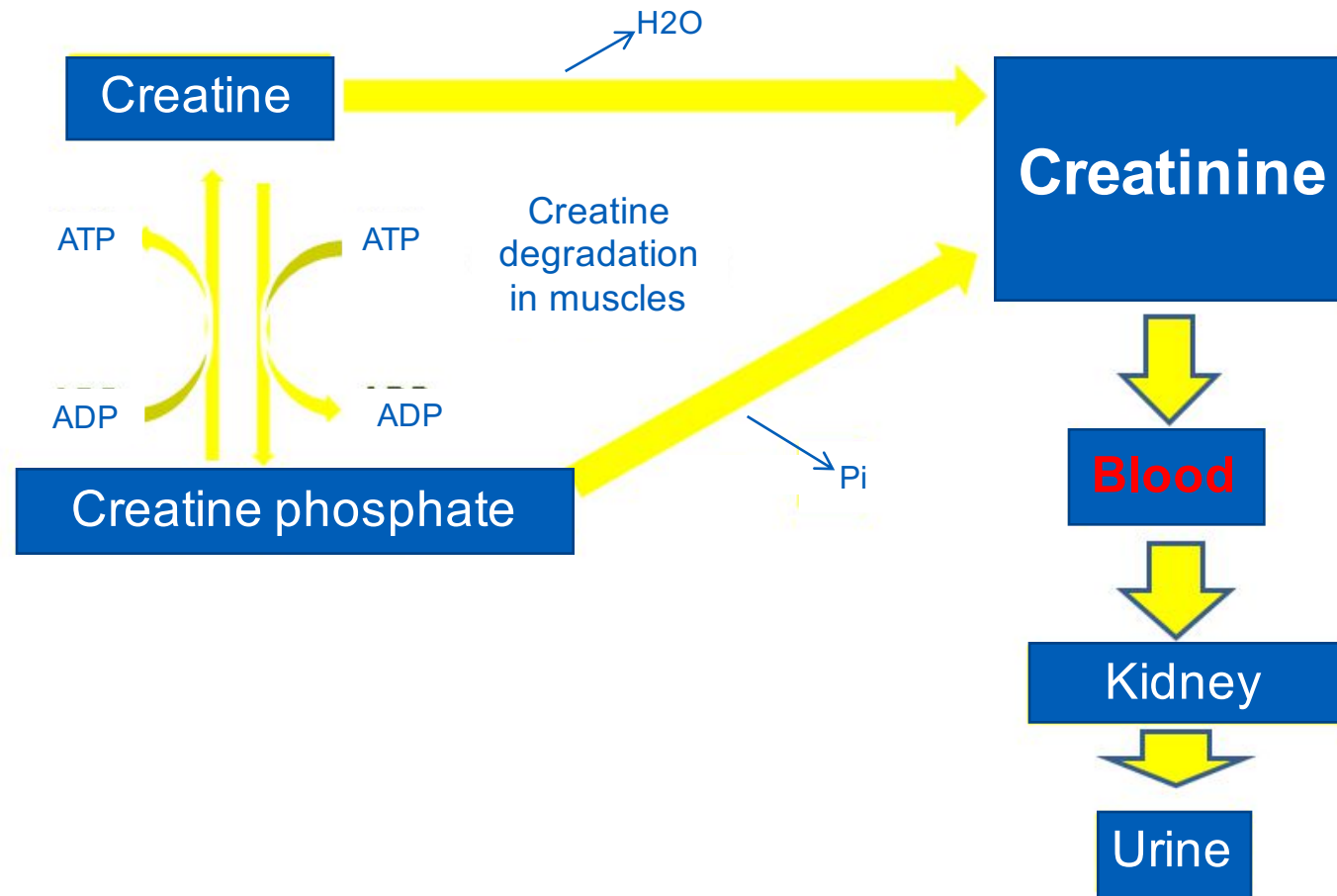
- Whey protein
 - Protein supplementation
 - Increases muscle growth

- BCAA
 - Essential amino acids
 - Improves post workout muscle recovery.

- Creatine
 - Glycine, methionine and arginine amino acids
 - Generates ATP
 - Greater power and strength



Renal considerations



Bulking supplements

- Multivitamins/ZMA
 - Reduces tiredness, fatigue and increase energy metabolism
- Essential fatty acids
 - Enhancing insulin sensitivity and improved metabolic profile
- Testosterone
 - Thought to improve performance, strength and muscle mass
- Steroid analogues
 - Improves protein synthesis, supporting lean muscle mass growth

What interaction needs to be considered?

1. Creatine and EFZ
2. ZMA and RAL
3. Omega 3 fatty acids and ABC
4. Testosterone and TDF
5. Winstrol (Stanozolol) and RPV



Divalent cation interactions

Potential Interaction
Dolutegravir
Magnesium
More Info

Potential Interaction
Elvitegravir/Cobi/FTC/TDF
Magnesium
More Info

Potential Interaction
Raltegravir
Magnesium
More Info

Potential Interaction
Dolutegravir
Magnesium
<p>Quality of Evidence: Very Low </p> <p>Summary: Coadministration has not been studied. Dolutegravir may be subject to chelation by high concentrations of divalent cations which may result in reduced dolutegravir concentrations. Dolutegravir should be administered 2 hours before or 6 hours after taking medications containing magnesium.</p> <p>Description: Multivitamins should be taken well separated in time from the administration of dolutegravir (minimum 2 hours after or 6 hours before). Factors that decrease dolutegravir exposure should be avoided in the presence of integrase class resistance. This includes co-administration with medicinal products that reduce dolutegravir exposure (e.g. multivitamins). <i>Tivicay Summary of Product Characteristics, ViiV Healthcare, January 2017.</i></p> <p>Simultaneous coadministration of a multivitamin preparation (One-A-Day) and dolutegravir (50 mg once daily) to 16 subjects decreased dolutegravir C_{max}, AUC and C_{trough} by 35%, 33% and 32%, respectively. Dolutegravir should be administered 2 hours before or 6 hours after taking medications containing polyvalent cations. <i>Tivicay US Prescribing Information, ViiV Healthcare, June 2016.</i></p>

Cutting

- Aim
 - Reduce body fat
 - Maintain muscle definition
 - Reduce calorific intake
 - Increase anaerobic exercise/HIIT

- Supplements
 - Thermogenics
 - Glutamine
 - Glucosamine
 - Meal replacements



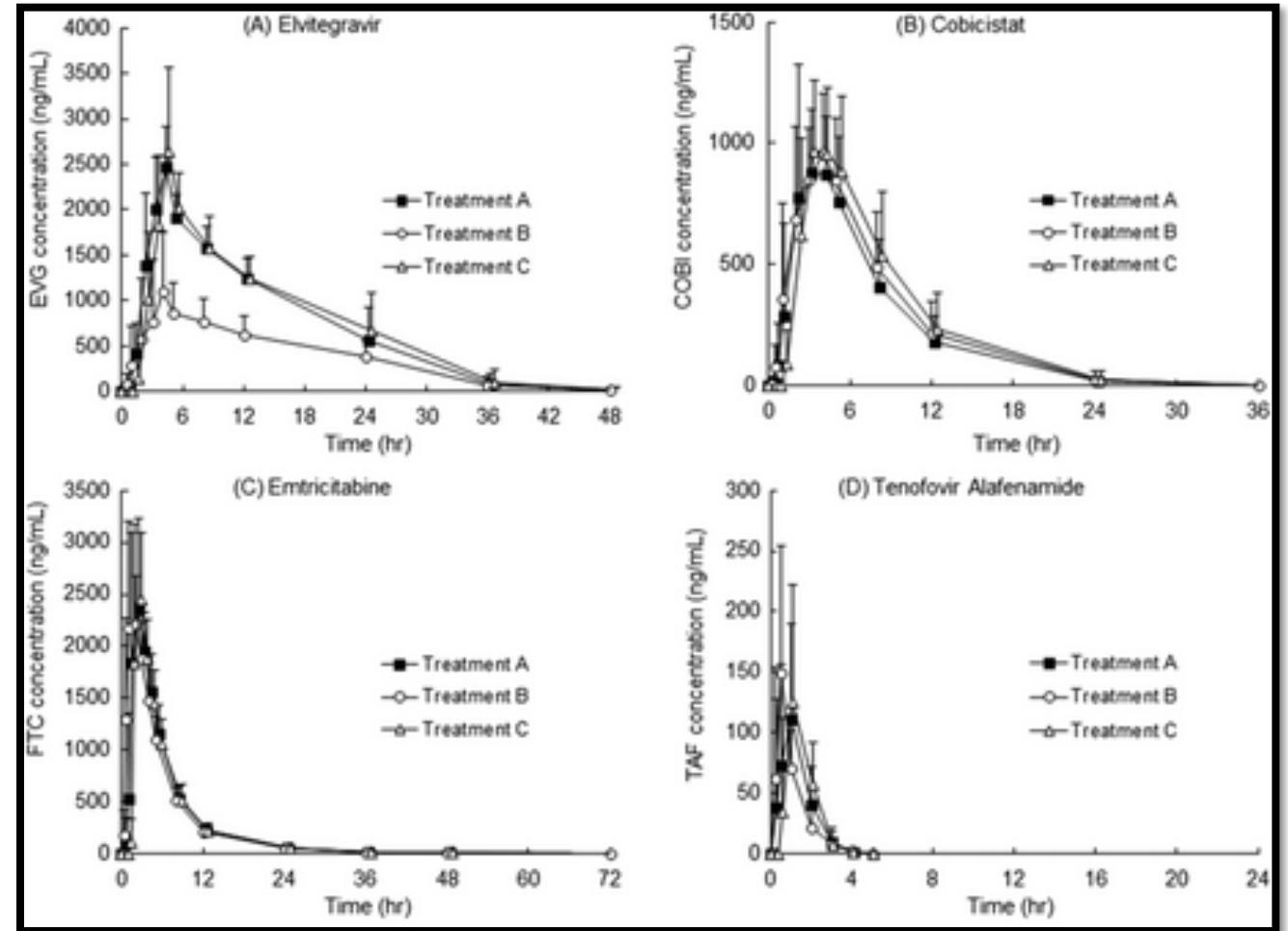
Cutting supplements

- Thermogenics
 - Fat burners or E/C/A stacks
 - Increases BMR
- Glutamine
 - Essential amino acid
 - Involved in protein synthesis and prevents muscle breakdown
- Glucosamine
 - Reduces development of OA
 - Used for joint support, no link to weight loss



Cutting supplements

- Meal replacements
 - Nutritionally balanced drinks
 - High protein
 - Low carbohydrate/fat
 - Used as substitute for a full meal
 - ? Effect on ARV absorption



Exercise side effects

- Side effects
 - DOMS
 - Heartburn/indigestion
 - Skin itching/jock itch
 - Urge to open bowels

- OTC remedies
 - NSAIDS
 - Antacids
 - Antihistamines
 - Antifungals
 - Anti-motility agents



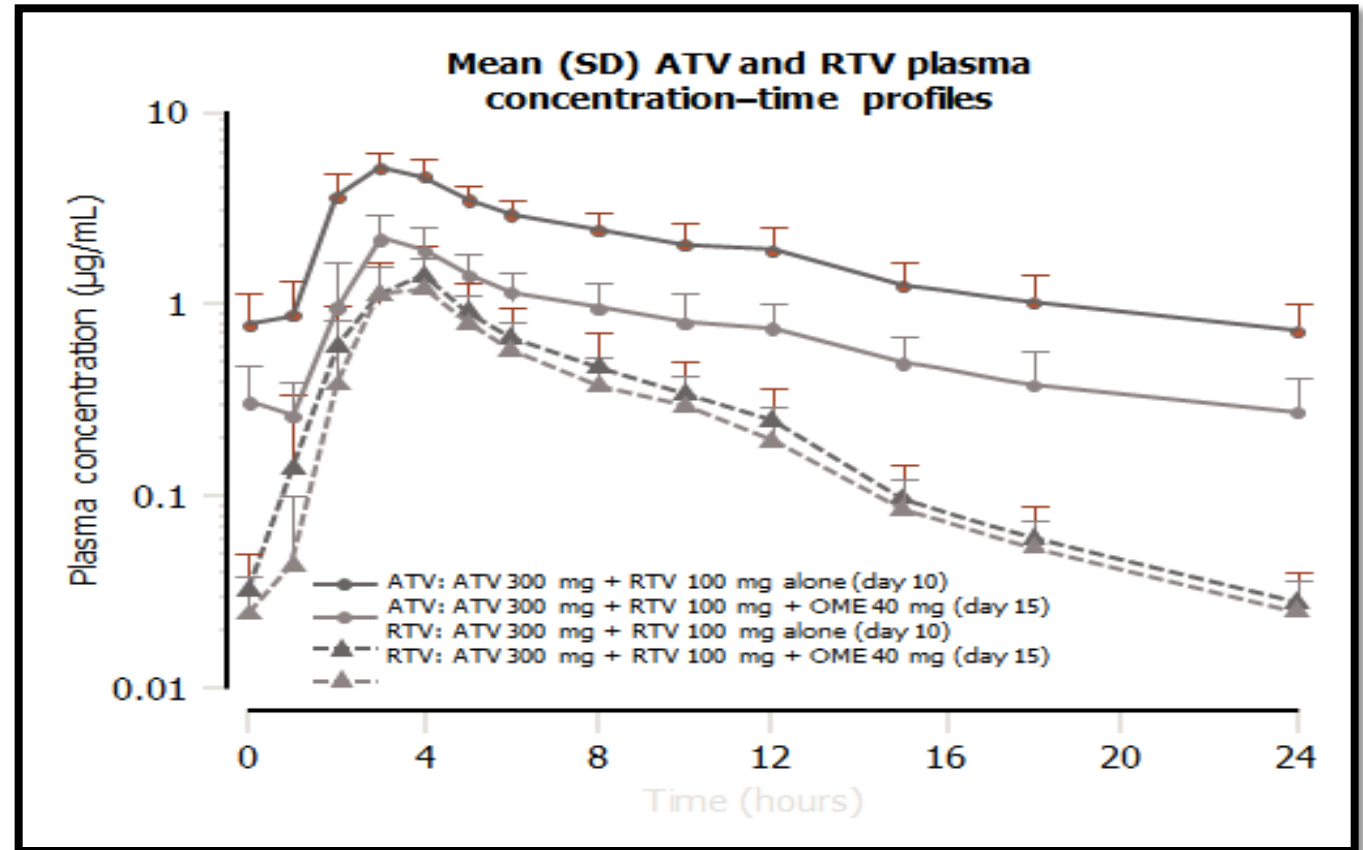
What caution needs to be considered?

1. ABC and Diclofenac
2. ATV and Ranitidine
3. RPV and Cetirizine
4. RAL and Ketoconazole
5. MVC and Loperamide



ATV interactions with Antacids/PPIs

- Reduced absorption
 - ATV solubility decreases as pH increases
 - Reduced ATV concentrations if given with Ranitidine
 - Omeprazole decreases AUC of ATV by 75%
 - Both PPIs and Antacids should be avoided



Summary and top tips

- Safety – what is it they are actually taking?
- Timings – practical advice around spacing
- Interactions – absorption, metabolism and excreting
- Monitoring – stop it and see

Any questions?

The only thing harder than Leg Day is not talking about it

