Twitter Thread by Kirsti Miller

Kirsti Miller
@KirstiMiller30

How long should trans females be made to reduce their levels of circulating testosterone should prior to competing in the women competition?

Gooren found that during the first 12 months muscle mass (area) was decreased by 9.4% & hemoglobin levels by 14% in 20 transwomen (M2F trans) treated with an estrogen-based regimen that reduced circulating T concentrations from the male

range to the female range.

Conversely, in 17 transmen (F2M transgender) treated for the first time with testosterone for 12 months (which increased circulating testosterone levels to a mean of 31 nmol/L), muscle mass increased by 19.2% and hemoglobin by 15%.
https://t.co/MOZtfh5Raf

The muscle mass findings remained stable between 1 and 3 years after initiation of treatment, although fat mass continued to change between 1 & 3 years of T treatment. although with disproportionately greater effect on muscle strength than on muscle mass.
https://t.co/8rMfUi4brV

This study did not report muscle strength, but other studies of T dose-response relationships for muscle mass and strength show consistently positively correlation,

https://t.co/0SqyneBjPZ…

https://t.co/pgyggiNG2u

https://t.co/0SqyneBjPZ…

https://t.co/A5AVkkShDj

Hence, the muscle mass estimates in these prospective treatment initiation studies in trans individuals likely underestimate the muscle strength gains from...

Elevated T levels where the circulating T markedly exceeds female range to be within the male range as occurs in severe hyperandrogenism of DSD females, poorly controlled transwomen (M2F transgender),..

or transmen (F2M transgender). These effects are also the biological basis of the ergogenic efficacy of androgen doping in women.

In both intersex/DSD and trans individuals, the developmental effects of adult male circulating T concentrations will have established the sex difference in muscle, hemoglobin, & bone, some of which is fixed & irreversible (bone size)....

.& some of which is maintained by the male circulating testosterone concentrations (muscle, hemoglobin).

The limited available prospective evidence from initiation of trans cross-sex hormone treatment suggests that the advantageous increases in muscle & hemoglobin due to male circulating T concentrations....

...are induced or reversed during the first 12mths & the androgenic effects may plateau after time.

This time course is much faster than the somatic effects of male puberty, which evolve over years and for some variables (e.g., peak bone mass) are not complete for up to a decade after the start of puberty.

However, the abrupt hormonal changes induced by medical treatment in intersex/DSD or transgender individuals may be telescoped compared with male puberty where circulating testosterone concentrations increase irregularly and incompletely for some years.

Additional data are available from the unique investigative model of men undergoing castration for prostate cancer. Just as androgen sensitivity to testosterone may differ between tissues...
https://t.co/S2yyg9Xq8j

The time course of offset of androgen effects following withdrawal of male testosterone concentrations may also differ between the major androgen-responsive tissues.

For example, circulating hemoglobin shows a progressive fall for 6 months reaching a nadir and plateau at 12 to 16 months in six studies involving 534 men undergoing medical castration for prostate cancer.
https://t.co/Bcg0PuNNu3

Although these studies of older men with prostate cancer must be extrapolated with caution, age, stage of disease, race, & baseline circulating T concentration did not affect the rate or extent of decline in hemoglobin.
https://t.co/Bcg0PuNNu3

https://t.co/2bii5lMZYy

Comparable longitudinal studies of muscle loss, strength, and performance following castration for prostate cancer are well summarized,
https://t.co/olda0NryXA

Showing progressive loss for 24 months (see Fig. 4).

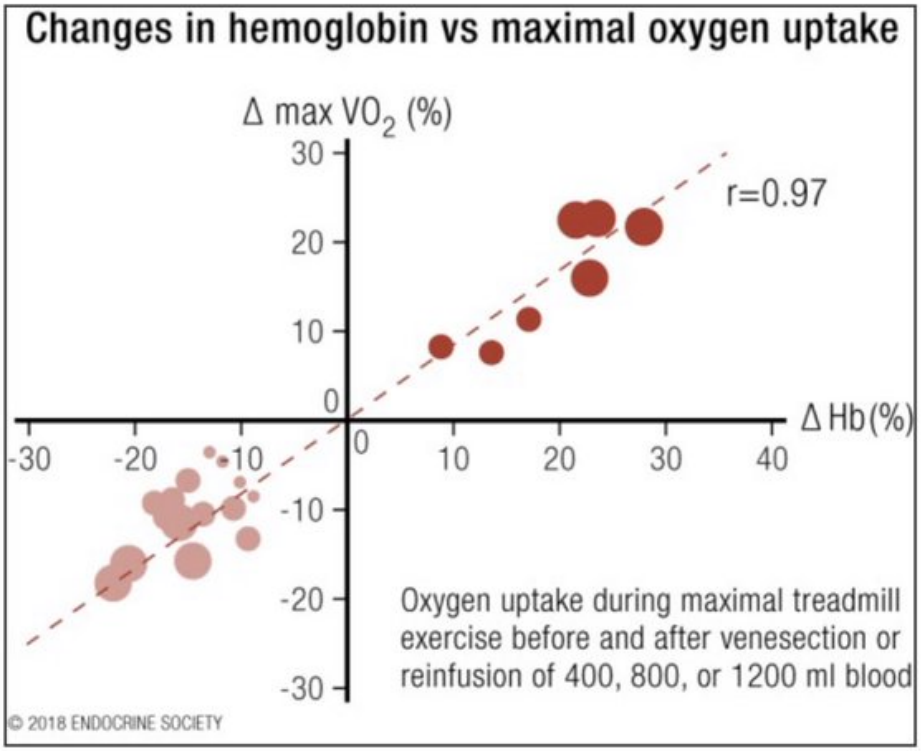

Figure 4.

Redrawn results from Ekblom *et al.* (124). Results from the transfusion of additional blood are shown in dark red circles and those after blood withdrawal in light red circles. Adapted with permission from Ekblom B, Goldbarg AN, Gullbring B. Response to ...

Richard Budgett (IOC).

Further clinical studies to define the time course of changes, mainly offset, in testosterone-dependent effects, notably on muscle and hemoglobin, are badly needed to determine the optimal duration for cross-sex hormone effects in sports.

End

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