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GABARITO

EXAMES DE AGOSTO DE 2022

LÍNGUA INGLESA

BIOMÉDICAS

Esta é a compilação do gabarito do exame PROFLIN de língua INGLESA aplicado em AGOSTO/2022. Neste documento, você terá acesso a:

- Questões do exame aplicado, gerado na plataforma Moodle, sem as respostas para as questões;
- Texto-base disponibilizado na plataforma Moodle, para resolução das questões;
- Gabarito indicando as respostas corretas para as questões de múltipla escolha, seguidas de justificativas tanto para a alternativa correta como para os distratores; respostas esperadas para as questões discursivas.

ATENÇÃO! ESTE NÃO É UM ESPELHO DO SEU EXAME PROFLIN! ESTE É UM GABARITO COM AS RESPOSTAS ESPERADAS DE TODOS OS CANDIDATOS E PODERÁ EMBASAR RECURSOS, DE ACORDO COM O QUE CONSTA EM EDITAL.

REVIEW

HOT TOPICS IN MALE INFERTILITY

Testosterone and male rejuvenation

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ABSTRACT

Testosterone has long been touted as the panacea for men wishing to restore their vitality, sexuality, and masculinity to that of their youth. While the benefits of testosterone are not mythical, they are definite. In this article we will review the various benefits of testosterone as it pertains to men's health and male infertility.

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KEY WORDS: Testosterone - Erectile dysfunction - Hypogonadism - Libido - Physiological sexual dysfunction.

Metabolic syndrome (MetS) is a worldwide public-health issue, which in the past has been largely confined to developed countries, yet now involves a growing number of developing countries undergoing industrialization as well. Industrialization has in turn led to the adoption of a Western diet, sedentary lifestyles, and increased obesity. This growing epidemic has garnered increased interest in the clinical application of testosterone therapy (TTh) for the improvement of MetS, weight loss, and muscle mass.

The relationship between testosterone, lean body mass, and athletic performance has long since been recognized. In 1935, Charles D. Kochakian, a pioneer in synthetic hormone research, reported that androgens stimulated the protein anabolic processes, leading to the belief that androgen therapy may restore protein tissue and stimulate muscle growth.¹ Clinical literature from the early 1940s comments on the correlation between androgens and enhanced muscularity, including speculation that the use of exogenous androgens may improve athletic performance.¹ In his 1945 publication of *The Male Hormone*, Paul De Kruif described the powers of TTh as "magical," with the

potential to cure a variety of ailments, and is credited for popularizing the use of synthetic testosterone among body builders.²

While such claims about testosterone have not ceased, there is now a strong body of contemporary evidence supporting the clinical use of TTh to improve anthropometric parameters. Cross sectional studies demonstrate a proportional decrease in total serum testosterone concentration with age,^{3, 4} a finding later corroborated by longitudinal studies.⁵ Similarly, lean body mass decreases, while fat mass increases with age.⁶ One consequence of these body composition changes that occur with aging is decreased muscle strength.⁷ Bhasin *et al.* were among the first to report an improvement in lean body mass, body weight, and cross-sectional size of muscle in their observational study of seven hypogonadal men treated with 10 weeks of intramuscular testosterone enanthate.⁸

In 1999, Snyder *et al.* published the first randomized placebo-controlled double-blind study of men over age 65 who were randomized to transdermal testosterone or placebo for 3 years.⁹ Authors selected for hypogonadal men, although admitted that mean baseline testosterone was

severity of obesity using Body Mass Index (BMI) into class I (BMI 30-34.9 kg/m²), class II (BMI 35-39.9 kg/m²), and class III (BMI >40 kg/m²). Class III subjects achieved the greatest weight loss, 23.6% compared to baseline, while classes I and II reported 16.8% and 21.5% weight loss, respectively. While all classes also sustained improvements in waist circumference and BMI, similar trends among classes were noted, with class III subjects experiencing the greatest degree of improvement. Several subsequent studies have confirmed these findings.^{14, 15, 23-30} Traish *et al.* recently published the results of their prospective observational study of 656 men, mean age of 60.7 years with a baseline testosterone <350 ng/dL and symptoms of hypogonadism.¹² Of the 656 men enrolled, 360 elected to receive TTh in the form of parenteral testosterone undecanoate 1000 mg every 12 weeks, while the remaining 296 subjects served as controls. At 8 years, subjects in the treatment group experienced a 16.4% weight loss, while those in the control group gained 0.7% compared to baseline (P<0.0001).

Most would agree that TTh is not a substitute for health-promoting lifestyle changes, but its effects may be complementary to diet and exercise. A randomized double-blind placebo-controlled trial published in 2016 sought to investigate the role of 56 weeks of TTh in addition to a very low energy diet in TD men.³¹ Of the 82 men who completed the study, those in the TTh group had a greater reduction in fat mass and visceral fat. While both groups achieved approximately 11 kg of weight loss by the end of the study, the weight loss in the TTh group was almost exclusively due to loss of body fat, in contrast to the placebo group that lost fat mass and lean body mass. Although these results are promising, they are not indefinite; at follow-up of 82 weeks there were no longer found differences in body fat or lean body mass between groups, and the TTh group had lost more lean body mass than controls.³² Interestingly, according to the results of one study, men with severe hypogonadism are more likely to demonstrate sustained weight loss of 3% or more after 1 year while on TTh compared to men with less severe hypogonadism.³³

On the other hand, TTH has also been applied as a treatment for men who are frail or suffering from chronic illnesses. Treatment of testosterone deficiency in men with human immunodeficiency virus results in similar improvements in libido, fatigue, and muscle mass, renewing interest in its application for human immunodeficiency wasting syndrome.^{34, 35} In 2010, Fleishman *et al.* reported the prevalence of testosterone deficiency as high as 48% among men with cancer unrelated to androgens, which

The benefits of TTh on weight loss are heavily marketed directly to consumers and widely reported in the medical literature. Several large observational studies have established a consistent relationship between TTh in testosterone deficient (TD) men and weight loss.^{12, 15, 22} A review of two independent observational registries published by Saad *et al.* identified 411 obese, TD men treated with TTh for up to 8 years.¹⁵ Authors stratified subjects according to

correlated with decreased quality of life and reduced sexual function.³⁶ A review of male patients with terminal cancer asserts that testosterone deficiency is an independent negative prognostic factor of life expectancy.³⁷ One report of community-dwelling men who were elderly and undernourished demonstrated reduced hospital admissions for men treated with TTh.³⁸

Bone mineral density

Testosterone and estradiol deficiency are risk factors for non-vertebral fractures and osteoporosis,³⁹⁻⁴⁵ health conditions that coincide with aging. There is an abundance of evidence that TTh increases bone mineral density.^{24, 46-48} The evidence supports improved bone mineral density of the lumbar spine, and the hip.^{47, 49-54} Recent data suggests that after 1 year of treatment TTh increases bone density and bone strength, particularly in trabecular bone, in contrast to cortical-rich peripheral bone.⁴⁷ The mechanism by which TTh exerts its effects are largely mediated by conversion to estradiol.⁵⁵⁻⁶⁰ A study of 45 testosterone deficient men with osteoporosis who were treated with parenteral testosterone undecanoate for up to six years demonstrated that bone mineral density improved progressively over time.⁶¹ The majority of patients had a dramatic response, and at the end of 6 years only four subjects met criteria for osteoporosis. While the mean age of subjects in this study was relatively young at 53, nearly half of subjects had a diagnosis of Klinefelter's disease yet had a similar response to treatment compared to subjects with testosterone deficiency of a different etiology. A larger observational study of 428 testosterone-deficient men confirmed similar improvements in vertebral and femoral bone mineral density at a follow-up of 8 years.⁶²

Lower urinary tract symptoms

According to preclinical evidence, testosterone plays a vital role in promoting increased bladder capacity by restoring the ratio of smooth muscle to connective tissue,⁶³ a finding that has been confirmed in clinical studies.⁶⁴ This is contradictory to the concern among many providers that testosterone may fuel prostate growth and worsen lower urinary tract symptoms, which is based on historical studies. The European Association of Urology guidelines assert that once a man's lower urinary tract symptoms are appropriately treated, there is no longer a contraindication to TTh.⁶⁵ The effect of TTh with both testosterone deficiency and benign prostatic hyperplasia (BPH) appears to

be beneficial. An experimental rabbit study by Vignozzi *et al.* demonstrated that testosterone supplementation may exert a protective effect by preventing some features of MetS in their model of high-fat diet-induced prostate fibrosis, hypoxia, and inflammation.⁶⁶

In 2011, Shigehara *et al.* published a randomized controlled clinical trial of 52 men randomized to testosterone enanthate 250 mg every 4 weeks or placebo who were followed for 12 months.⁶⁷ Authors noted that the treatment group experienced improvement in maximum flow rate and voided volume ($P < 0.05$), while no significant changes were observed in the control group. Neither group experienced a change in post void residual volume. In a larger retrospective study by Ko *et al.* compared 246 men treated with TTh and 17 men who were also treated with TTh but whom had moderate lower urinary tract symptoms and were not on any medical therapy BPH.⁶⁸ Mean baseline testosterone was less than 300 ng/dL for both groups, and while baseline characteristics were similar between groups, patients in the group without BPH medication had a higher Qmax than patients on BPH medication, 25 mL/s *versus* 17 mL/s, respectively ($P = 0.056$). Subjects not on BPH medication also had a higher baseline post void residual compared to those on BPH medication, 21 mL *versus* 10 mL, respectively, although this value is unlikely to be clinically significant ($P = 0.009$). At 1-year follow-up, subjects on TTh and BPH medication had no change in total international prostate symptom score, 13 and 14 pre- and post-TTh, respectively ($P = 0.703$). Subjects not on BPH medication, but who were receiving TTh improved slightly from 9 to 7 ($P = 0.028$). Further analysis revealed that subjects improved in both voiding and storage symptoms. It is important to note that there was no statistical difference in uroflowmetry parameters in either group on TTh.

The relationship between testosterone deficiency and lower urinary tract symptoms is not merely a function of age, but also of body habitus. Subgroup analysis of men enrolled in the Medical Therapy of Prostatic Symptoms Study evaluated 1896 men who had a testosterone level recorded at baseline. The overall prevalence of testosterone deficiency was 25.7%, which correlated with increasing BMI and was as high as 39.3% in men with a BMI > 30 kg/m².⁶⁹

Cardiovascular disease

There is now a strong body of observational evidence that TTh decreases risk for overall mortality and myocardial

Randomized placebo-controlled trials expanded on the beneficial effects of TTh on mortality. English *et al.* reported a reduction in exercise-induced myocardial ischemia in men with chronic stable angina, although lipid profiles did not change with TTh.⁷⁸ Malkin *et al.* tested the efficacy of TTh in 76 men with heart failure, and found improvements in exercise capacity and symptoms from baseline compared with placebo (P=0.006).⁷⁹

Several studies have demonstrated a relationship between erectile dysfunction (ED) and testosterone deficiency.⁸⁰⁻⁸² Testosterone deficiency is associated with symptoms of decreased sexual desire, ED, and ejaculatory dysfunction. The role of TTh in the management of these symptoms is hotly debated, yet critics would largely agree that the effect of TTh differs with each sexual symptom.

nificant in men with an initial testosterone levels below 361 ng/dL, and did not have an effect in eugonadal men. Another review of 17 randomized placebo-controlled trials including 862 men failed to produce significant and consistent effects on ED and sexual satisfaction in men on TTh, although did produce a large albeit nonsignificant effect on libido.⁸⁴ In a meta-analysis by Corona *et al.*, men treated with TTh showed a significant, although modest, improvement of an average of 0.20 points on the IIEF-15 libido domain.⁸⁵

While systematic reviews and meta-analyses have produced conflicting results, several individual studies present a strong case of the application of TTh in for the treatment of ED. A prospective observational study of 261 men diagnosed with late-onset testosterone deficiency who were treated with long-acting intramuscular testosterone undecanoate for an average treatment time of 4.25 years reported a 71% improvement in IIEF-5 score, and 31% improvement in AMS score within the first 3 months of treatment with TTh.⁸⁶ At the completion of the study, participants showed an improvement in IIEF-5 score to 21.96 from a baseline score of 7.8. Khera *et al.* also showed significant improvement in erectile function in a prospective observational study comparing testosterone to placebo, with Brief Male Sexual Function Inventory scores improving in the erectile function domain from 8.0 to 9.4 at 6 months and was sustained to 12 months.⁸⁷ Subjects also saw a significant, though mild, improvement in ejaculatory function. The Testosterone Trials Study also offers support for the use of TTh in the treatment of ED in TD men. This double-blinded, placebo-controlled study included 790 men 65 years and older with a baseline testosterone level less than 275 mg/dL. Authors showed an improvement in erectile function in the TTh group of 2.64 points at 12 months compared to only 1.0 point in the placebo group.⁸⁸ Several other studies have produced similar results.^{64, 89-92}

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Cognitive aging and psychologic health

While a strong body of evidence exists supporting the relationship of depression to ED, the association between depression and testosterone deficiency is less clear.^{88, 94-99} Nearly 75% of patients with depression report a low libido,^{100, 101} while 41% of men with depressive symptoms reporting moderate to severe ED in the Massachusetts Male Aging Study – double that of their nondepressed counterparts.¹⁰² Notably, the Massachusetts Male Aging Study did not find a correlation between total serum testosterone and depression; these findings were further corroborated by the Baltimore Longitudinal Study of Aging, which also found no association.¹⁰³ Rizvi *et al.* concluded that major depressive disorder was a stronger predictor of ED than testosterone deficiency.¹⁰⁴ A review of 856 men age 50 to 89 revealed 17% lower bioavailable testosterone levels in men with depression compared to men who were not depressed independent of age, weight change, and physical activity.¹⁰⁵ Lastly, a larger study of 3987 men age 71 to 89 included 203 men with depression, who had significantly lower total and free testosterone concentrations than non-depressed men.¹⁰⁶ While these were observational studies, there are several randomized placebo-controlled trials examining the efficacy of TTh in TD men for the treatment of depression.

In 2014, Amanatkar *et al.* reported the results of their meta-analysis in which they included only randomized placebo-controlled trials and concluded that TTh had a significant positive impact on mood ($Z=4.592$; $P<0.0001$).¹⁰⁷ In a longitudinal study of men treated with testosterone gel for 36 months, mood improved compared to baseline, particularly in men younger than age 60.¹⁰⁸ Another observation study of 849 TD men who were also treated with testosterone gel demonstrated clinically meaningful improvements in Patient Health Questionnaire scores ($P<0.01$) as early as 3 months, while the number of patients with moderately severe to severe symptoms of depression decreased from 17.3% to 2.1% by 12 months.⁸⁷ Data from the Testosterone Trials confirmed similar benefits with men age 65 or greater deriving a slight improvement in mood and lower severity of depressive symptoms compared with placebo.⁸⁸

The effect of testosterone deficiency on cognition is another area of interest, yet the heterogeneity in study design, methodology and outcomes measured makes it difficult to interpret these results. The Baltimore Longitudinal Study of Aging revealed an association between improved scores on visual and verbal memory, visuospatial function-

ing, and visuomotor scanning and a reduced rate of longitudinal decline in visual memory in men with a higher free testosterone index.¹⁰³ Though Huang *et al.* failed to demonstrate any treatment differences in cognitive parameters in 308 men randomized to TTh or placebo during a mean follow-up period of 29 months.¹⁰⁹ A recent systematic review by Hua *et al.* concluded that the evidence supporting TTh to improve cognition is promising, particularly in men with mild cognitive impairment or Alzheimer's disease in whom TTh may have a protective effect by slowing the rate of cognitive decline in men who are eugonadal at baseline.¹¹⁰ The data is inconclusive at this point, and further long term follow-up studies are necessary.

Impact on fertility

Infertility, defined as the inability to conceive after 12 months of unprotected intercourse, occurs to 15% of couples.¹¹¹ Testosterone production is necessary for normal spermatogenesis and is regulated by the hypothalamic-pituitary-gonadal axis via pulsatile secretion of gonadotropin-releasing hormone.¹¹² Gonadotropin-releasing hormone stimulates the release of luteinizing hormone from the anterior pituitary, which in turn stimulates Leydig cells in the testicle to produce testosterone. Exogenous testosterone can lead to atrophy of the germinal epithelium, suppressing spermatogenesis as early as 10 weeks after initiation.¹¹³ Upon cessation of exogenous testosterone, spermatogenesis will rebound in most men after a period of 6-18 months, potentially requiring up to 24-30 months to return to normal concentrations¹¹⁴⁻¹¹⁸ and a remaining 4-10% of men may remain azoospermic.¹¹⁹

Urologists are the third leading prescribers of testosterone at 15.25%, preceded by endocrinologists (23.73%) and general practitioners (16.95%).¹²⁰ Despite the known detrimental effects that exogenous testosterone has on spermatogenesis, 25% of urologists surveyed by the American Urological Association reported actually using TTh for the treatment of male infertility.¹²¹ A semen analysis should be performed in men desiring to maintain fertility, prior to the initiation of TTh to rule out idiopathic male factor infertility.

Alternatives to TTh for TD men who desire to maintain fertility include human chorionic gonadotropin (hCG), selective estrogen receptor modulators (SERMs), and aromatase inhibitors (AIs). Intramuscular hCG can be prescribed in addition to TTh to minimize the deleterious effects that exogenous testosterone has on spermatogenesis. A randomized, controlled trial of 29 healthy men assigned to

testosterone enanthate 200 mg weekly in addition to either intramuscular saline, 125, 250, or 500 IU hCG every other day demonstrated preservation of intratesticular testosterone levels in men who received 500 IU hCG.¹¹² In addition to preservation of intratesticular testosterone levels, hCG therapy can also maintain spermatogenesis. A retrospective study of 26 TD men treated with TTh and concomitant low-dose hCG demonstrated no differences in semen parameters at 1 year of follow-up and prevented azoospermia while on TTh.¹²² Prospective, long term studies are lacking in the literature to determine the qualitative and quantitative benefits of this dual therapy.

SERMs function as an estrogen receptor agonist or antagonist depending on the tissue it is bound to. In the brain SERMs bind to estrogen receptors, antagonizing the effects of estrogen on the hypothalamus and anterior pituitary. Clomiphene citrate is a common SERM used off-label to treat testosterone deficiency and male infertility by increasing luteinizing hormone and follicle stimulating hormone production thus leading to increased production of intratesticular testosterone. Several small studies have demonstrated that clomiphene citrate effectively improves serum testosterone while preserving spermatogenesis.¹²³⁻¹²⁶ Recently, more interest has emerged in using enclomiphene citrate, a potent trans-isomer of clomiphene citrate that inhibits negative feedback from estrogen on the hypothalamic-pituitary axis. A randomized, open-label, phase IIB study demonstrated that after 6 months of treatment with 1% testosterone gel, enclomiphene citrate restored both testosterone and sperm counts at 3 and 6 months.¹²⁷ A double-blind, placebo-controlled phase II study randomized 120 TD men to receive either 12.5 mg or 25 mg enclomiphene citrate, 1% testosterone gel, or placebo.^{127, 128} Enclomiphene citrate was as effective as 1% testosterone gel in elevating total testosterone levels and maintaining sperm concentrations at a level comparable to the placebo group and higher than those of the TTh group. Larger placebo-controlled studies are needed to verify the efficacy of clomiphene citrate and enclomiphene citrate in improving testosterone levels while preserving semen parameters.

AIs inhibit the testosterone to estrogen converting enzyme aromatase, which is found in the testes, liver, brain, and adipose tissues.¹²⁹ Estrogen indirectly inhibits the hypogonadal-pituitary-gonadal axis; therefore, AIs decrease estrogen levels and increase gonadotropin production. Clinically, AIs are used off-label for the treatment of testosterone deficiency and male infertility, with a particular focus on men who are obese or who have a serum testos-

terone-to-estrogen ratio <10.^{130, 131} Due to the increased adipose tissue in obese men, AIs are a logical treatment for testosterone deficiency in this population. While several randomized controlled studies have demonstrated a robust response in serum testosterone, they have failed to demonstrate a difference in body composition, strength, lipid levels, or psychological measures.¹³²⁻¹³⁵ Additional concerns include the effect of decreased circulating estradiol on bone mineral density,^{59, 136} sexual function, prevention of abdominal adiposity¹³⁷ and insulin sensitivity.^{138, 139} AIs can be prescribed concurrently with TTh or hCG to mitigate the side effects of hyperestrogenemia.

Conclusions

Men turning to TTh as the elusive fountain of youth need to adjust their expectations to avoid disappointment. While the benefits of TTh are not infinite, they are well defined by a strong body of evidence supporting the use of TTh for the treatment of testosterone deficiency. Users may unlock improvements in anthropometric parameters, bone mineral density, cardiovascular health, sexual function and urinary function. Prior to initiating TTh, clinicians should engage their patient in an informed conversation about the risks and benefits of therapy to ensure that they are a proper candidate with realistic expectations.

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Questão 1

Não respondido

Vale 1,00 ponto(s).

Analise as proposições a seguir, segundo o texto, e assinale a alternativa **CORRETA**.

I – A síndrome metabólica pode ser considerada um problema de saúde pública mundial, não se circunscrevendo mais somente aos países desenvolvidos.

II – A relação entre massa magra, desempenho atlético e testosterona tem sido estudada há bastante tempo.

III – A terapia de testosterona já foi reportada na literatura como milagrosa, tendo o potencial de curar inúmeras doenças.

IV – Estudos transversais e estudos longitudinais compartilham resultados relativos à diminuição da testosterona com o passar da idade.

V – Estudos transversais e estudos longitudinais revelam aumento de gordura e diminuição de massa magra com o avanço da idade.

Escolha uma opção:

- ☐ As alternativas I, II, IV e V estão corretas.
- ☐ As alternativas I, II, III e V estão corretas.
- ☐ As alternativas III, IV e V estão corretas.
- ☐ Todas as alternativas estão corretas.



Questão 2

Não respondido

Vale 1,00 ponto(s).

Analise as proposições a seguir, segundo o texto, e assinale a alternativa **CORRETA**.

I – A terapia de testosterona parece exercer influência sobre a sensibilidade à insulina.

II – A terapia de testosterona parece elevar os níveis de glicose no sangue.

III – A terapia de testosterona não parece exercer influência sobre o perfil lipídico.

Escolha uma opção:

- ☐ Nenhuma alternativa está correta.
- ☐ Apenas a alternativa II está correta.
- ☐ Apenas a alternativa I está correta.
- ☐ Apenas a alternativa III está correta.

Questão 3

Não respondido

Vale 1,00 ponto(s).

Especificamente sobre o impacto da terapia de testosterona em homens e a relação com a perda de peso, **compreende-se que:**

Escolha uma opção:

- ☐ Estudos têm demonstrado um impacto menos positivo da terapia de testosterona em homens que apresentam maiores taxas de obesidade.
- ☐ Em geral, estudos não têm confirmado um impacto positivo da terapia de testosterona em homens que apresentam obesidade.
- ☐ Estudos têm demonstrado um impacto mais positivo da terapia de testosterona em homens que apresentam menores taxas de obesidade.
- ☐ Em geral, estudos têm demonstrado um impacto positivo da terapia de testosterona em homens que apresentam variadas taxas de obesidade.

Questão 4

Não respondido

Vale 1,00 ponto(s).



Com relação aos sintomas do trato urinário inferior e sua relação com a testosterona, é **INCORRETO** afirmar que:

Escolha uma opção:

- ☐ A testosterona desempenha um papel importantíssimo, restabelecendo a proporção entre tecido muscular liso e tecido conjuntivo.
- ☐ A relação entre deficiência de testosterona e sintomas do trato urinário inferior não é apenas uma função da idade, mas também de biótipo.
- ☐ Ainda que os sintomas do trato urinário inferior do homem tenham sido tratados, permanece a contraindicação do tratamento de testosterona.
- ☐ A literatura aponta que há efeitos positivos da terapia de testosterona para a deficiência do hormônio e a hiperplasia prostática benigna.

Questão 5

Não respondido

Vale 2,00 ponto(s).

Baixas taxas de testosterona e estradiol são consideradas fatores de risco para fraturas não-vertebrais e osteoporose, o que tende a ocorrer especialmente com o envelhecimento. Há bastante evidência na literatura que suporta a terapia de testosterona em favor da melhora da densidade mineral dos ossos. Neste sentido, sintetize as principais ideias dos autores sobre a terapia de testosterona e sua relação com a densidade mineral dos ossos.



Questão 6

Não respondido

Vale 2,00 ponto(s).

Com base nos dados e evidências apresentados no texto, elabore sobre a seguinte afirmação: Ainda que haja evidência sólida sobre a relação entre depressão e disfunção erétil, a associação entre depressão e deficiência de testosterona é menos clara. Forneça dados que corroborem o aspecto indefinido da questão.

Questão 7

Não respondido

Vale 2,00 ponto(s).

Os autores finalizam o artigo fornecendo algumas considerações acerca da terapia de testosterona. Elenque-as e relacione-as com o título do artigo.





LÍNGUA INGLESA**BIOMÉDICAS****GABARITO**

TEXTO-BASE: Helo, S. et al. Testosterone and male rejuvenation. **Panminerva Medica**, núm. 61, v. 2, 2019, p. 128-137.

QUESTÃO 1:

Enunciado: Analise as proposições a seguir, segundo o texto, e assinale a alternativa **CORRETA**.

- I – A síndrome metabólica pode ser considerada um problema de saúde pública mundial, não se circunscrevendo mais somente aos países desenvolvidos.
- II – A relação entre massa magra, desempenho atlético e testosterona tem sido estudada há bastante tempo.
- III – A terapia de testosterona já foi reportada na literatura como milagrosa, tendo o potencial de curar inúmeras doenças.
- IV – Estudos transversais e estudos longitudinais compartilham resultados relativos à diminuição da testosterona com o passar da idade.
- V – Estudos transversais e estudos longitudinais revelam aumento de gordura e diminuição de massa magra com o avanço da idade.

Gabarito:

Todas as alternativas estão corretas.

Distratores:

- 1) As alternativas I, II, IV e V estão corretas.
- 2) As alternativas III, IV e V estão corretas.
- 3) As alternativas I, II, III e V estão corretas.

Justificativa: Com relação à alternativa I, o texto explica no primeiro parágrafo que a síndrome metabólica pode ser considerada um problema de saúde pública mundial, não se circunscrevendo mais somente aos países desenvolvidos, mas também aos países em processo de industrialização, o que tem ocasionado mudanças na alimentação e no estilo de vida das pessoas. Em relação à alternativa II, os autores afirmam, no segundo parágrafo, que a relação entre massa magra, desempenho atlético e testosterona tem sido estudada há bastante tempo e citam como exemplo o pioneiro desses estudos, Charles D. Kochakian, em 1935. Com relação à alternativa III, ainda no segundo parágrafo, os autores comentam que a terapia de testosterona já foi reportada na literatura como mágica, em 1945, por Paul De Kruif, com o potencial de curar inúmeras doenças. Em relação à alternativa IV, os autores informam, no terceiro parágrafo, que tanto estudos transversais quanto estudos longitudinais compartilham resultados que comprovam a diminuição da testosterona com o passar da idade. Por fim, sobre a alternativa V, também no terceiro parágrafo, os autores complementam que esses estudos também revelam aumento de gordura e diminuição de massa magra com o avanço da idade.

QUESTÃO 2:

Enunciado: Analise as proposições a seguir, segundo o texto, e assinale a alternativa **CORRETA**.

- I – A terapia de testosterona parece exercer influência sobre a sensibilidade à insulina.
- II – A terapia de testosterona parece elevar os níveis de glicose no sangue.
- III – A terapia de testosterona não parece exercer influência sobre o perfil lipídico.

Gabarito:

Apenas a alternativa I está correta.

Distratores:

- 1) Apenas a alternativa II está correta.

2) Apenas a alternativa III está correta.

3) Nenhuma alternativa está correta.

Justificativa: A alternativa I está correta, enquanto as alternativas II e III apresentam imprecisões. Na seção intitulada Sensibilidade à Insulina, os autores explicam que, com base em evidências advindas de estudos feitos, a terapia de testosterona parece exercer influência sobre a sensibilidade à insulina, melhorando-a; a terapia de testosterona parece diminuir os níveis de glicose no sangue e HbA_{1c}; e a terapia de testosterona melhora tanto o perfil lipídico quanto a pressão sanguínea.

QUESTÃO 3:

Enunciado: Especificamente sobre o impacto da terapia de testosterona em homens e a relação com a perda de peso, **pode-se afirmar que:**

Gabarito:

a) Em geral, estudos têm demonstrado um impacto positivo da terapia de testosterona em homens que apresentam variadas taxas de obesidade.

Distratores:

b) Em geral, estudos não têm confirmado um impacto positivo da terapia de testosterona em homens que apresentam obesidade.

c) Estudos têm demonstrado um impacto menos positivo da terapia de testosterona em homens que apresentam maiores taxas de obesidade.

d) Estudos têm demonstrado um impacto mais positivo da terapia de testosterona em homens que apresentam menores taxas de obesidade.

Justificativa: Segundo os autores, é seguro afirmar que, em geral, estudos têm demonstrado um impacto positivo da terapia de testosterona em homens que apresentam variadas taxas de obesidade. No trecho “Saad et al. identified 411 obese, TD men treated with TTh for up to 8 years.¹⁵ Authors stratified subjects according to Mass Index (BMI) into class I (BMI 30-34.9 kg/m²), class II (BMI 35-39.9 kg/m²), and class III (BMI >40 kg/m²). Class III subjects achieved

the greatest weight loss, 23.6% compared to baseline, while classes I and II reported 16.8% and 21.5% weight loss, respectively. While all classes also sustained improvements in waist circumference and BMI, similar trends among classes were noted, with class III subjects experiencing the greatest degree of improvement” fica evidente que estudos têm confirmado um impacto positivo da terapia de testosterona em homens que apresentam variadas taxas de obesidade. Ainda, fica também evidente que aqueles classificados com índice de massa corpórea maior do que 40 kg/m² (Classe III) apresentaram melhores resultados com a terapia de testosterona.

QUESTÃO 4:

Enunciado: Com relação aos sintomas do trato urinário inferior e sua relação com a testosterona, é **INCORRETO** afirmar que:

Gabarito:

a) Ainda que os sintomas do trato urinário inferior do homem tenham sido tratados, permanece a contraindicação do tratamento de testosterona.

Distratores:

b) A literatura aponta que há efeitos positivos da terapia de testosterona para a deficiência do hormônio e a hiperplasia prostática benigna.

c) A relação entre deficiência de testosterona e sintomas do trato urinário inferior não é apenas uma função da idade, mas também de biótipo.

d) A testosterona desempenha um papel importantíssimo, restabelecendo a proporção entre tecido muscular liso e tecido conjuntivo.

Justificativa: Na seção intitulada Sintomas do Trato Urinário Inferior, os autores relatam que a literatura aponta para efeitos positivos da terapia de testosterona na hiperplasia prostática benigna. Os autores também afirmam que uma vez que os sintomas do trato urinário inferior do homem tenham sido tratados, não há mais contraindicação do tratamento de testosterona. Segundo os autores, nesse mesmo trecho, a relação entre deficiência de testosterona e sintomas do trato urinário inferior não é apenas uma função da idade, mas também de biótipo. Por fim, é

correto afirmar, segundo os autores, que a testosterona desempenha um papel de suma importância em relação à capacidade da bexiga, restabelecendo a proporção entre tecido muscular liso e tecido conjuntivo.

QUESTÃO 5:

Enunciado: Baixas taxas de testosterona e estradiol são consideradas fatores de risco para fraturas não-vertebrais e osteoporose, o que tende a ocorrer especialmente com o envelhecimento. Há bastante evidência na literatura que suporta a terapia de testosterona em favor da melhora da densidade mineral dos ossos. Neste sentido, sintetize as principais ideias dos autores sobre a terapia de testosterona e sua relação com a densidade mineral dos ossos.

Resposta esperada: O candidato deve demonstrar a capacidade de localizar informações específicas no texto e a de sintetizá-las a partir das ideias dos autores. Com relação à terapia de testosterona e a densidade mineral dos ossos, os estudos mostram que depois de um ano de tratamento com a terapia de testosterona há aumento na densidade e na força dos ossos pela conversão em estradiol. Ainda, um estudo com homens com baixas taxas de testosterona e com osteoporose demonstrou que a densidade mineral dos ossos melhorou progressivamente ao longo de seis anos com o uso de undecanoato de testosterona, sendo que poucos apresentaram quadro de osteoporose no final do tratamento. Outro estudo observacional mostrou resultados semelhantes, no qual houve melhoras na densidade mineral de ossos vertebrais e femorais ao longo de oito anos.

QUESTÃO 6:

Enunciado: Com base nos dados e evidências apresentados no texto, elabore sobre a seguinte afirmação: Ainda que haja evidência sólida sobre a relação entre depressão e disfunção erétil, a associação entre depressão e deficiência de testosterona é menos clara. Forneça dados que corroborem o aspecto indefinido da questão.

Resposta esperada: O candidato necessita demonstrar a compreensão da associação entre depressão e deficiência de testosterona discutida pelos autores no texto. Entre os dados apresentados, o candidato deve citar, por exemplo, que 75% dos pacientes com depressão reportam baixa libido e 41% dos homens com sintomas de depressão reportam moderada à severa disfunção erétil no Estudo do Envelhecimento do Homem de Massachusetts. Ainda, segundo os dados apresentados, não foi encontrada uma correlação entre nível total de

testosterona e depressão. A literatura também revela que o Transtorno Depressivo Maior é um preditor mais forte da disfunção erétil do que a deficiência de testosterona. Contudo, há estudos que mostram que homens com depressão apresentam níveis mais baixos de testosterona biodisponível. Por fim, é importante acrescentar que em um estudo com quase 4000 homens, aqueles com depressão apresentaram concentrações de testosterona livre e total menores do que homens que não tinham depressão.

QUESTÃO 7:

Enunciado: Os autores finalizam o artigo fornecendo algumas considerações acerca da terapia de testosterona. Elenque-as e relacione-as com o título do artigo.

Resposta esperada: O candidato necessita depreender informações específicas a partir das conclusões do estudo e demonstrar a capacidade de relacionar as considerações feitas pelos autores com o título do artigo. Nas conclusões, os autores pontuam que os homens que procuram a terapia de testosterona como uma fonte elusiva de juventude precisam ajustar suas expectativas para evitar decepções. Ainda que os benefícios da terapia de testosterona não sejam definitivos, eles estão bem definidos a partir de evidências da literatura que dão suporte para o uso da terapia de testosterona para o tratamento da deficiência desse hormônio. Os autores ainda afirmam que os pacientes podem obter melhoras nos parâmetros antropométricos, na densidade mineral dos ossos, na saúde cardiovascular, na função sexual e na função urinária. Antes de iniciar tal tratamento, médicos devem fornecer esclarecimentos acerca dos riscos e dos benefícios da terapia para se certificarem de que os pacientes são bons candidatos com expectativas realísticas.