**LOW T/HIGH T TESTOSTERONE AND THE HEART**

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Testosterone (T) replacement therapy (TRT) is sometimes prescribed for men with no evident heart disease to enhance sexual function and sense of well-being, and has been proposed as a therapy to improve cardiac contractility. We undertook a series of studies in male rat hearts and myocytes isolated from male rat hearts that had undergone T deprivation by castration and then following T supplementation. Supraphysiological concentration of T produces cardiac hypertrophy, regulates androgen receptor expression, and increases abundance of transcripts for calcium channel proteins and the Na/Ca exchanger. Myosin heavy chain composition is altered and single cell systolic and diastolic function is augmented by T replacement (all p<0.05). In observational clinical studies of CHF patients, low T is associated with increased all-cause mortality. However, low T and mortality may be simply covariates. A large observational study of men with low T who received T replacement therapy showed increased 1 year and 3 year major adverse cardiac events (MACE). At 3 years MACE was 11.3% in men with low T vs. 5.9% for those with normal T at baseline (p<0.0001). A meta-analysis of trials of T replacement and CV outcomes has highly heterogeneous findings. TRT has proven overall benefit only for those with T levels clearly below normal prior to therapy. There is little clinical evidence at this time for improved cardiac function produced by TRT in a broad population of men. Men prescribed TRT must be informed of possible increased CV risk.