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Influence of stamina and training for selected physical variables and lipid profiles of female college players in Karnataka

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Abstract
Achieving and maintaining health and fitness, as well as improving athletic performance, are just a few of the numerous goals that people strive for via the use of physical exercise. The many diverse types of exercise programs offered by the government and private organizations have varying effects on many aspects of fitness, including muscular strength, cardiovascular endurance, and body composition. When it comes to improving one's lipid profile and overall body composition, the SE and ES procedures are almost interchangeable. In light of the above, the present investigation set out to determine how collegiate female athletes' lipid profiles and physiological characteristics were affected by endurance, strength, and concurrent training.

Keywords: Lipid profiles, players, sports, athletic performance, physical fitness

Introduction
Achieving high levels of performance in sports requires a methodical and scientific approach to training methods. When it comes to improving, maintaining, and recovering one's performance capacity and readiness for performance, training involves a variety of physical exercises as well as other modalities, techniques, and processes. The term "training means" may refer to any resource, strategy, or instrument utilized to achieve the goals of training. The performance capacity is directly and indirectly impacted by each training method in its own unique way.

It is important to track the middle-aged population's quality of life and get them ready for aging since human life expectancy is on the rise, particularly in industrialized nations. This presents a number of issues in physical culture and public health, which in turn is a dilemma for medicine. illnesses of affluence include some of the most prevalent age-related conditions in today's culture, such as cardiovascular disease, high blood pressure, diabetes type 2, cancer, autoimmune illnesses, and obesity. Low levels of physical activity and unhealthy eating habits are major contributors to the prevalence of affluent illnesses, which affect nations all around the world. Cardiovascular illnesses provide the biggest risk to health among affluent people and often cause early deaths.

Sports To participate is to make the most of one's talents, to join a collaborative team effort, to feel the highs and lows of success and failure. Nowadays, sports throughout the globe are cutthroat. Athletes in any sport may benefit greatly from high-quality training that makes use of modern technological tools.

Whether done alone or as part of a team, the goals of participating in sports are the same: to stay or become in better shape while having fun. A level of ability may be necessary, particularly at the highest levels of competition, and there may be objective ways to determine the winner or winners in sports. Sports are often associated with physical athleticism, however certain non-physical pastimes, such card games and board games, are sometimes called sports.

Training
Training is the all-encompassing process of preparing a sportsperson to perform at a higher level via many sorts of instruction. A person's fitness level is the primary goal of training. Athletes use this kind of training regimen to become in better shape for competition by

building their stamina and skill levels. Some of the effects of physical exercise include localized muscular alterations, enhanced neuromuscular coordination, and a cascade of systemic changes affecting the cardiovascular and respiratory systems. Components of physical fitness are crucial to athletic success. When a sportsman has the specialized physical fitness of numerous motor components—abilities that are required for different sorts of sports and at different levels—then it doesn't matter what sport that sportsmen is playing. Physical fitness indirectly affects athletic performance. However, general physical fitness is the most important factor in determining particular physical fitness.

High-intensity interval training

Anaerobic exercise, often known as interval training or HIIT, is characterized by short bursts of high-intensity activity (> 90% V02max) followed by shorter bursts of low-to moderate-intensity exercise or rest. There is a negative correlation between time and intensity in high-intensity interval training (HIIT), but the length of these intervals varies substantially between protocols, ranging from a few seconds to several minutes. Recent research has shown that high-intensity interval training (HIIT) may improve VO2max, lactate threshold (LT) velocity, time trial performance, and endurance training to the same or even greater extent than endurance training. The more noticeable peripheral adaptations that occur after HIIT could be the reason for this augmented improvement. In addition to reducing glycogen and phosphocreatine depletion, HIIT has been shown to raise oxidative enzyme activity and indicators of whole body lipid oxidation.

Review of related literature

Cavar, M *et al*., (2019) [12] examined the impact on aerobic and anaerobic performance of varying high-intensity interval and moderate continuous training regimens over a duration of six weeks. We investigated the training effects of three different programs on aerobic capacity and aerobic performance, as determined by the 20-meter maximum shuttle run (Beep) test and the 300-yard shuttle run, respectively, in order to offer useful data. The study included 45 guys who were physically fit, and their average age was 21.1±1.8 years. There were two high-intensity interval training (HIIT) protocols in the six-week, twelve-session regimens; one utilized a continuous shuttle run (CON) as a control, and the other employed a short (SH) or long (LH) shuttle run interval. In order to determine the appropriate values of the time to exhaustion (TTE), the training intensity was determined by the maximum shuttle run speed (MASS), which was evaluated on the Beep test. Each participant was required to complete about 15 repetitions of short (SH) training at 115-120% (MASS), using a 10-second work to 10-second rest strategy. The left hemisphere training was carried out at a magnitude of 90-95% (MASS), for a period of 70% (TTE) (about 4 minutes). Each session included three sets of SH and LH exercises, with two or three minutes of rest in between. During CON training, participants ran continuously at a 70% MASS intensity for 35 minutes. A significant training impact was seen with both SH and LH ($p<0.01$), while SH had a preference for enhancing anaerobic performance and LH had a preference for aerobic performance. There was no discernible impact of CON training. Our research shows that these various training regimes are not interchangeable and that the Beep test might be helpful for determining how long and how intense HIIT should be.

Pérez-Turpin JA *et al*., (2019) [1] looked studied the data collected from best beach volleyball players who were young. Examining the tactical and technical habits of young, top beach volleyball players from various age groups and genders was the primary goal of this research. Approach: Forty-two squads from the under-18, under-20, under-21, and under-22 age groups at the 2016 European Championship and world championships were evaluated. There were 69 sets in the sample. Serving effectiveness (standing, floating, and jump serves), setting efficacy (forearm, overhand, other, and 2ndattack), attack efficacy, and block efficacy were among the characteristics examined individual's and Specific differences between categories were analyzed using Mann-Whitney U-tests. Men's forearm pass performance decreased from 78.2% to 49.1% and men's overhand pass performance decreased from 12.2% to 40.45%, with statistically significant differences ($p<0.05$) in both groups. Furthermore, the female forearm pass decreased from 88.5% to 76.3% and the female overhand pass decreased from 1.2% to 9.35%.there were no notable variations in the efficiency of the attack, rally time, serve, or block. Conclusion: while training young players, it may be vital to take tactical factors into account and account for gender-specific variations in technical variables.

Kilit *et al*., (2019) [2] compared the results of young tennis players who participated in high-intensity interval training to those who participated in traditional on-court training. Young tennis players' psychophysiological reactions, performance responses, and technical scores were the focus of his 6-week HIIT vs. 6-week OTT research. Fifteen male tennis players (n=14) and thirteen male tennis players (n=15) were split into two groups, with each group given an age range of 13.8±0.4 years. The overall training period was same for the two groups, and each session included passive rest. Maximum oxygen consumption (Vo2max), leaping, sprinting, a 400-meter run time, a tennis-specific technical exam, and the t-drill agility test were all part of the pre- and post-tests. The training regimens had comparable effects on vo2max responses, with HIIT showing a +5.2% increase and OTT showing a +5.5% increase (both with a significant effect size of 1.36 and 1.5, respectively). There was a substantial improvement in leaping and sprinting performances between the pre- and post-tests for both training regimens ($p<0.05$, values ranging from 0.40 to 1.10). In comparison to the HIIT group, the OTT group had significantly better performance responses on the agility test and technical scores ($p<0.05$, d= ranging from 0.77 to 0.88 [moderate effect]). The HIIT group, on the other hand, showed noticeably better performance responses when it came to the 400-meter run time ($p<0.05$, d=1.32 [large effect]). Our findings suggest that court-specific tennis drills could be a better way to train young tennis players to improve their agility and technical ability while also making the workout more enjoyable.

Viaño-Santasmarinas *et al*., (2018) [3] reviewed research on the impact of high-intensity interval training on the physical performance of handball players using varying interval lengths. The goal of this research was to examine the impact on peak running velocity in the 30-minute intermittent fitness test (VIFT) of two alternative high-intensity interval training (HIIT) protocols in handball players: a short [SI] protocol and a long [LI] protocol. Each of the two groups, SI (2 sets of 22 intervals of 10-second runs at 95% VIFT) and LI (5 sets of 3-minute intervals at 85% VIFT), consisted of 18 players who had received extensive training. The players' ages ranged from 22.7 to 3.9 years, and their heights were 181.5 to 6.6 cm and 84.7 to 14.1 kg, respectively. Two times a week for six weeks was the requirement of the intervention program. We measured 30-minute incremental foot speed (IFT), countermovement leap, repeated sprint ability (RSA), and 10-meter sprint before and after the training session. Both SI (8.18%) and LI (8.19%) showed statistically significant increases in VIFT between the pre- and post-tests in the within-group analysis. Effect sizes (ES) of 0.72 and 0.38 for SI and LI players, total time (ES = 0.72 and 0.38 for both groups), and percentage of decrease (ES=1.08 and 0.77 for LI and SI, respectively) were significantly higher after the pretest than after the posttest. A very strong correlation (r=0.857) was found between the percentage changes in the percentage of decrease in RSA and the percentage changes in VIFT for both groups when they were combined. No differences were found between the SI and LI training groups in the between-groups analysis (p> 0.05). These findings support the idea that both HIIT programs help handball players become in shape before the season starts. On the other hand, SI's superior specificity makes it the better HIIT technique to utilize.

Anne Delextrat *et al*., (2018) [4] studied the effects of small-sided games and high-intensity interval training on the performance of aerobic and repetitive sprints, as well as changes in peripheral muscle oxygenation in junior basketball players who were at the top of their game. During a repeated sprint (RS) sequence, this research aimed to examine the effects of high-intensity interval training (HIIT) and six weeks of small-sided game (SSG) on aerobic fitness and muscle oxygenation in top male junior basketball players. A total of twenty individuals (14.3±0.5 years; 176.8±12.5 cm; 74.5±9.8 kg) were tested before and after a 6-week period of SSG or HIIT exercise. Both the 30–15 intermittent fitness test and the RS sequence (two 15-second bursts) were part of the testing sessions. Muscle oxygenation parameters were assessed using near-infrared spectroscopy during RS. These measures include the tissue saturation index (TSI, %) and the post-sprint muscle reoxygenation rate. The results demonstrated that both training methods enhanced maximum aerobic speed (VIFT, 3.4 and 4.1% for HIIT and SSG, respectively, $p<0.05$) and RS ability (a reduced percentage decrease of 62.5 and 21.6% for HIIT and SSG, respectively, $p<0.05$). There was a substantial increase in ΔTSI during the second sprint (47.8-114%, $p<0.05$) and post-sprint reoxygenation following both training regimens (+23.0 to +107.7%). By the end, the variation in Improvements in aerobic (ΔVIFT, r =0.61, P =0.008) and anaerobic (Δ% Dec during RS, r = −0.487, P = 0.028) performances were substantially linked to muscle reoxygenation following sprint 1. Improved aerobic and anaerobic variables, as well as muscle oxygenation capacity during RS, were shown to have equivalent outcomes for SSG and HIIT in the present research. Both programs are useful tools for coaches looking to boost their junior basketball players' aerobic and anaerobic fitness levels for the next season.

Bayrakdar *et al*., (2019) [13] investigated how calisthenics training affected swimmers' body fat percentage and athletic performance. The study's 30 willing participants were swimmers aged 12–14. Three groups were formed from the participants. There were three groups of ten swimmers: one that did calisthenics on flat ground and four to five units of swimming training; another that did the same on uneven ground and four to five units of swimming training; and a third that did the same on uneven ground and four to five units of swimming training. Consistent participation of seven hours per week was required for the whole eight weeks of the trial. The following measures were taken: height, weight, BMI, percentage of body fat, flexibility, agility, 30-meter speed, back and leg strength, crunches, push-ups, and planks. We used the IBM SPSS 19 software suite to do the statistical analysis. Flexibility, agility, 30 meters speed, back and leg strength, crunch, push-up, and plank values were significantly different at the $p<0.05$ level. The proportion of body fat does not very much. Incorporating calisthenics exercise three times weekly for 60 minutes per training unit and weight weeks, among other advantages, will improve health and performance, according to this study. Furthermore, it is believed that offering a range of exercise modes in the implementations at the right moment (elastic bands, step, health balls, rope jumping) would be beneficial in terms of implementations.

Ying *et al*., (2013) [14] investigated how calisthenics training affected the balance and coordination of university students. In order to provide college students with an experimental foundation for aerobic exercise. Methods: Sixty students were split into two groups. One group, called the experimental group, exercised calisthenics three times a week for sixty minutes each session. The other group, called the control group, did not do any calisthenics at all. After a certain amount of time had passed, the students' vital capacity, heart rate, motor coordination, and balance were assessed while they were engaged in calisthenics exercises. The statistical findings and comparisons between the two sets of data were examined in the research. Compared to the control group, the test group showed an improvement in vital capacity index. When compared to the control group, the outcomes of the motion stabilizer and bimanual coordination tests were better. Whether you do them before or after your calisthenics, you'll see a little improvement in your standing fall index while you're at rest. The results show that calisthenics are a great way to improve your balance and coordination.

The effects of concurrent strength and endurance training on physical fitness and athletic performance in youth

Youth physical fitness and motor development are both boosted by regular physical exercise. For children and adolescents (ages 5–17), the World Health Organization recommends 60 minutes of moderate-to vigorous-intensity physical exercise per day. At least three times a week, you should engage in aerobic exercise with supplementary strength training. So, it's important for young people to engage in strength and endurance training on a regular basis. Although physical exercise helps kids develop their motor skills, young athletes may get an advantage in the long run when it comes to developing their sport-specific athletic performance via endurance training (ET) and strength training (ST). The ability to perform at a high level aerobically and with a strong set of muscles is crucial for many sports. Using the principle of training specificity, we may say that ST increases muscle strength while ET increases cardiorespiratory endurance.

When it comes to athletic performance, both players and coaches are always looking for methods to improve training while reducing the chances of injury. Concurrent training (CT) is an effective strategy for improving performance that involves strengthening muscles and improving cardiovascular fitness simultaneously. CT has the potential to enhance athletic performance beyond what would be achieved with training only ET and ST by amplifying their separate impacts. Spending less time on ST and more time recovering or developing sport-specific abilities may be the result of a positive interaction between the two. Runners and cyclists may see more significant gains in performance using CT when compared to single-mode ET during time trials. Moreover, in a 45-minute cycle-ergometer test, top cyclists who engaged in both cycling and lower-limb progressive resistance training showed a greater increase in mean power output (Δ: 26.4 W, 8.4%) with CT than with ET (Δ: 11.5 W, 3.7%).

On the other hand, a "interference effect" may occur if ST and ET interfered with one another, causing ET to generate weaker improvements in muscle strength than ST. In other words, the standardized mean differences (SMDs) for muscular strength, hypertrophy, and power were all higher when ST was administered alone as opposed to CT. The respective groups' SMDs were 1.76 and 1.44, 1.23, and 0.85, respectively.

Results in adults have informed current hypotheses about CT's potential additive or subtractive effects. There may be a variation in response to CT between adults and kids due to anthropometric, physiological, and biomechanical factors that impact the effects of exercise training. Translation: it's not possible to use adult data on youngsters because of the physiological changes that occur throughout development and maturity. For example, in 25-year-old distance runners, the CT group showed a slight improvement in 3 km performance (Δ: −17 s, 2.1%), while the ET group showed a slight decrease (CT: −10 s, 1.6%; ET: −3 s, 0.5%). The study also found that at running velocities above 12 km/h, the CT group showed a 4-7% improvement and the ET group showed <1% improvement in running economy. Also, ST that were meant to cause hypertrophy in adults didn't work on prepubescent kids. Furthermore, utilizing magnetic resonance imaging, a 10-week machine-based ST program with sub-maximal intensities (70-80% of the 1-repetition maximum [1RM]) enhanced lower-limb muscular strength but had no effect on quadriceps cross-sectional area in prepubescent children. Due to low amounts of androgens, children's muscles do not seem to be able to hypertrophy after exercise.

The influence of endurance training on the lipid profile, body mass composition and cardiovascular efficiency

It is easy to see the positive impacts of training on health in those who are already active. Enhancements to cardiovascular function, skeletal health, body composition, and lipid metabolism are all part of these alterations. Effortful physical activity has several health benefits, including lowering the risk of death from cardiovascular disease, ischemic heart disease, coronary artery disease, and overweight and obesity. Depending on the individual, exercise may alter blood lipid profiles by increasing HDL-C levels and decreasing triglyceride and low-density lipoprotein cholesterol (LDL-C). Amateur long-distance cross-country skiers may undergo these transformations during summer training sessions by engaging in activities like roller skiing and using a cross-country skiing training equipment (Ercolina Upper Body Power, Quero Vas (BL), Italy) that mimics the skier's upper body action. However, no research or findings have been found to support these beliefs at this time.

An alternative to more costly approaches (such as pharmaceutical treatment, surgery, or physiotherapy) that accomplish the same aims is physical effort, which may be used for both prevention and treatment.

Exercise has many health advantages, including improving exercise tolerance, lipid metabolism, and preventing obesity. One example is preparing amateurs for long-distance cross-country races. Furthermore, Ren *et al*. noted that it helped with endothelial function, inflammation, insulin sensitivity, autonomic modulation, and blood pressure management, among other improvements. Although one research found that both jogging and cross-country skiing increased the cardiorespiratory fitness of middle-aged men without training to the same extent, the former may be the superior choice.

Despite the fact that exercise improves lipid profiles and lowers body fat percentages, the World Health Organization has determined that more than 25% of the global population is not active enough, with the percentage rising in industrialized nations. Strength training and aerobic endurance are two of the suggested forms of physical exercise. These assumptions have been validated by recent scientific studies. The risk of coronary heart disease (CHD) was shown to be lower in those who engaged in total physical activity, which comprised running, weight training, and walking, as reported by Tanasescu and colleagues. Independent of training amount, there was a lower risk linked with average exercise intensity.

The increasing number of amateurs competing in long-distance cross-country ski races has prompted discussions over the potential health benefits of such events. They have training volumes that go above and above what is recommended by public health officials. Cardiac arrhythmias and other negative alterations might be seen in this population. This is particularly crucial for middle-aged men, since their susceptibility to cardiac problems is heightened by the absence of collateral circulation. Marathons account for a disproportionately large number of exercise-induced cardiac episodes (cardiac arrhythmias), particularly in males aged 35 and over. Arrhythmias were much more common in middle-aged men after intense continuous exercise compared to while they were at rest, and 33 out of 37 men in both investigations had ventricular premature complexes (VPCs). Thus, it seems that comprehensive health evaluations, which include lipid and cardiovascular profiles, might be useful and successful in safeguarding the health of amateurs.

People who don't exercise frequently but suddenly start exercising have a myocardial infarction risk that's fifty times greater than habitual exercisers who exercise moderately or vigorously. Therefore, training should be periodized and weights should be adjusted according to the body. This highlights the need of keeping tabs on amateurs' physiological and biochemical data and getting them ready for competition properly. Protecting XCS's health is possible with the right training regimen, which includes maintaining a healthy body composition and lipid profile.

There is a lack of information on amateur cross-country skiers in the literature, in contrast to studies involving professionals or those with obesity or excess weight. Protecting against the risk of CHD and maintaining public health may depend on closely monitoring changes in body composition and lipid profiles. Managing training and competition overloads is equally essential for this group. It is crucial to routinely manage these markers, particularly in the population of physically active middle-aged men, since abnormalities in the lipid profile and body composition might amplify the perception of circulatory system failure.

Evaluate the impact of stamina training on lipid profiles

The effects of aerobic exercise on lipid profiles are being studied in a 12-week randomized control experiment. Three groups of subjects were randomly assigned. Division A: Control Group; Division B: Treadmill; Division C: Ergometer Cycle.

The treadmill, cycle, and control groups were compared based on the mean difference between their pre- and post-tests.

Assessing the aerobic exercise intervention group versus the control group based on anthropometric data one table

Variable	Tread mill group (n=20)	Cycle group (n=20)	Control group (n=20)
	Mean ± SD	Mean ± SD	Mean ± SD
Age (in years)	29.45±3.817	30.25±3.795	30.95±3.433
Height (m)	1.615±0.081	1.614±0.081	1.620±0.07 3
Weight (kg)	67.9±13.920	70.8±15.343	69.05±8.6 28
BMI (m^2/kg)	26. 042±5.033	27.111±5.110	26.312±3.032

Conclusions

This research aims to understand how collegiate female athletes' lipid profiles—including HDL-C, LDL-C, and total cholesterol—are impacted by endurance, strength, and concurrent training on a variety of physiological factors. Subjects for this research were 60 female college athletes from Government First Grade College for Women Gadag for Females in Karnataka who participated in various sports at the intercollegiate and university levels. The individuals included in the study were between the ages of 25 to 57. Each of the three groups will consist of fifteen (n=15) participants; there will also be a control group. One group was the Endurance Training Group (ETG), the other was the Strength Training Group (STG), the third was the Concurrent Training Group (CTG), and the fourth was the Control Group (CG).

Prior to and immediately after the eight weeks of training, the chosen criteria variables' physiological and lipid profiles were evaluated using standardized testing. This research used a pre- and post-test random group design with 60 participants. Under the watchful eye of the researcher, each training session was conducted. While the experimental group received targeted instruction, the control group went about their business as usual.

References

1. Pérez-Turpin JA, *et al*. Performance Indicators in Young Elite Beach Volleyball Players. Psychol. 2019 Dec 12 [cited 2024 Apr 26]. Available from: https://doi.org/10.3389/fpsyg.2019.02712
2. Kilit *et al*. Effects of High-Intensity Interval Training vs. On-Court Tennis Training in Young Tennis Players. J Strength Cond Res. 2019 Jan;33(1):188-196. doi: 10.1519/JSC.0000000000002766.
3. Viaño-Santasmarinas *et al*. Effects of high-intensity interval training with different interval durations on physical performance in handball players. J Strength Cond Res. 2018 Dec;32(12):3389-3397. doi: 10.1519/JSC.0000000000001847.
4. Delextrat A, *et al*. Effects of small-sided games and high-intensity interval training on aerobic and repeated sprint performance and peripheral muscle oxygenation changes in elite junior basketball players. J Strength Cond Res. 2018 Jul;32(7):1882-1891. doi: 10.1519/JSC.0000000000002570.
5. Yi S-W, Yi J-J, Ohn H. Total cholesterol and all-cause mortality by sex and age: A prospective cohort study among 12.8 million adults. Sci Rep. 2019;9:1596. doi: 10.1038/s41598-018-38461-y.
6. Benn M, Tybjaerg-Hansen A, Nordestgaard BG. Low LDL cholesterol by PCSK variation reduces cardiovascular mortality. J Am Coll Cardiol. 2019;73(24). doi: 10.1016/j.jacc.2019.03.517.
7. Maciejewska-Skrendo A, *et al*. The polymorphism of the peroxisome-proliferator activated receptors' alfa gene modify the aerobic training induced changes of cholesterol and glucose. J Clin Med. 2019;8:1043. doi: 10.3390/jcm8071043.
8. De Roos NM, Bots ML, Katan MB. Replacement of dietary saturated fatty acids by trans fatty acids lowers serum HDL cholesterol and impairs endothelial function in healthy men and women. Arterioscler Thromb Vasc Biol. 2001;21:1233–1237. doi: 10.1161/hq0701.092161.
9. Chang S-L, *et al*. Combination of Exercise and Vegetarian diet: Relationship with High Density-Lipoprotein Cholesterol in Taiwanese Adults Based on MTHFR rs1801133 Polymorphism. Nutrients. 2020;12:1564. doi: 10.3390/nu12061564.
10. Huang Y-W, *et al*. Vegan diet and blood lipid profiles: A cross-sectional study of pre and postmenopausal women. BMC Women's Health. 2014;14:55. doi: 10.1186/1472-6874-14-55.
11. Haskell WL, *et al*. Physical Activity and Public Health. Med Sci Sports Exerc. 2007;39:1423–1434. doi: 10.1249/mss.0b013e3180616b27.
12. Barcot O, Boric M, Pericic PT, Cavar M, Dosenovic S, Vuka I, *et al*. Risk of bias judgments for random sequence generation in Cochrane systematic reviews were frequently not in line with Cochrane Handbook. BMC medical research methodology. 2019 Dec;19:1-0.
13. Bayrakdar S, Coulter R, Lersch P, Vidal S. Family formation, parental background and young adults' first entry into homeownership in Britain and Germany. Housing Studies. 2019 Jul 3;34(6):974-996.
14. Son J, Lyssiotis CA, Ying H, Wang X, Hua S, Ligorio M, *et al*. Glutamine supports pancreatic cancer growth through a KRAS-regulated metabolic pathway. Nature. 2013 Apr 4;496(7443):101-105.