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Background and Purpose

The role of university sports includes developing skills and fitness for competition and for healthy lifestyles. Fitness and training recommendations for performance and health are well documented and have been subjected to continuous review:

- Blending aerobic exercise and strength training exercise for cardiorespiratory and muscular fitness and overall health and function (ACSM, 2015).
- Individualized training regimen for developing efficient stroke technique, covering appropriate training volume-without overreaching, proper nutrition, and effective day-of-competition strategy (Richmond et al., 2015)
- Various land-based training exercises with mechanical relevance to the swimming action -the arm pull, leg kick, dive and turn movements are required (Brandon, 2002).
- Developing confident and competent swimmer through progressive stages, and a lifelong love of water, ASA (2003).

However, there is paucity of information on how various local sports teams comply with these guidelines. This work sheds light on extent to which East African universities (EAU) swimming athletes meet fitness, health and training guidelines, and highlights the areas that require improvement.

The **purpose** was to assess extent to which East African universities swimming athletes meet fitness, health and training guidelines.

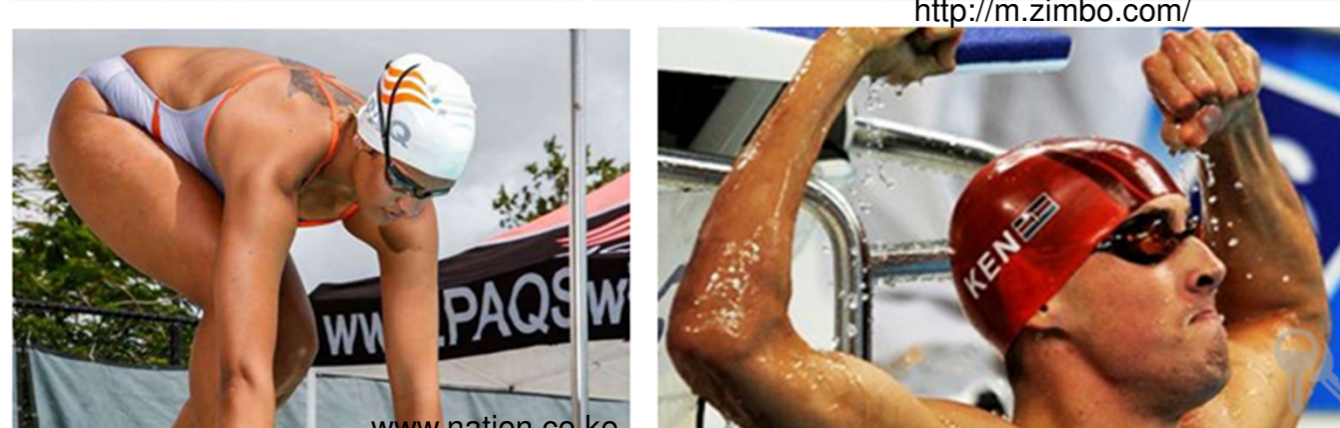


Figure 1; Some Kenyan university students (Dunford brothers, Talisa Lanoe, etc) based in US and European universities have excelled at international swimming competitions, unlike those based in EA universities

Methods

Questionnaire and fitness assessment tests were used to collect data among 32 (18 male and 14 female) East African universities swimming athletes during East African Universities Games (EAUG) competition period. The data was evaluated to ascertain the extent they were meeting various fitness, health and training recommendations (ACSM, 2015; Richmond et al., 2015; ASA, 2003; Brandon, 2002). Best performances of each event were evaluated against international standard times (FINA, 2015).

Results

Descriptive analyses (Mean \pm Std. Dev) yielded the following results for Male(M) and Female(F) swimming athletes:

Age; 23.1 \pm 2.1(M), 21.2 \pm 1.6(F) [yrs], Training frequency; 2.5 \pm .92(M), 2.5 \pm .86(F) [per week], Waist circumference; 74.2 \pm 12.4(M), 72.1 \pm 7.7(F) [cm], Waist Hip Ratio; .80 \pm .04(M), .72 \pm .05(F), Body Mass Index; 22.56 \pm 1.82(M), 23.69 \pm 3.89(F), Body fat; 19.78 \pm 5.33(M), 35.00 \pm 5.79(F) [%], Hand grips dynamometry right and left hands average; 31.94 \pm 6.35(M), 16.39 \pm 4.86(F) [kg], Leg dynamometry; 105.28 \pm 24.52(M), 66.21 \pm 17.34(F) [kg], Back dynamometry; 109.50 \pm 23.71(M), 75.50 \pm 18.66(F) [kg], Push-ups; 24.1 \pm 5.9(M), 19.1 \pm 4.0(F) [counts], Sit-ups; 33.7 \pm 9.17(M), 20.00 \pm 9.67(F) [counts], Back-scratch; .00 \pm 2.84(M), -1.59 \pm 2.41(F) [Inches], Sit-and-reach; 12.06 \pm 7.83(M), 13.61 \pm 8.78(F) [cm], and Body balance -stock stand on right and left feet average; 8.31 \pm 3.22(M), 6.64 \pm 4.50(F) [sec], Best times as a ratio of FINA's standard time; 1.45(M), 1.58(F) [average ratio].

No land-based, gym or cross training program was evident.

Table 1; East African universities swimming performance compared to FINA's Olympic Selection Time (OST) 2015

Male Performance			SWIMMING EVENTS		Female Performance		
FINA's OST [sec]	EAUG Best[sec]	EA/OST [ratio]	Event	FINA's OST [sec]	EAUG Best[sec]	EA/OST [ratio]	
23.05	27.34	1.186	50 m Freestyle	26.17	33.63	1.285	
50.70	65.90	1.300	100 m Freestyle	56.34	86.60	1.537	
111.80	161.90	1.448	200 m Freestyle	123.10	176.70	1.435	
238.50	364.40	1.528	400 m Freestyle	257.80	424.10	1.645	
N/A	N/A	N/A	800 m Freestyle	532.00	871.40	1.638	
946.80	1354.60	1.431	1500 m Freestyle	N/A	N/A	N/A	
56.26	81.10	1.442	100 m Backstroke	62.40	102.40	1.641	
122.40	196.90	1.609	200 m Backstroke	135.20	225.80	1.670	
62.70	85.90	1.370	100 m Breaststroke	70.20	108.20	1.541	
136.30	192.80	1.415	200 m Breaststroke	152.10	241.40	1.587	
54.19	75.70	1.397	100 m Butterfly	60.80	87.80	1.444	
121.10	226.20	1.868	200 m Butterfly	133.90	254.10	1.898	
124.40	172.70	1.388	200 m Individual Medley	139.00	216.40	1.557	
265.70	397.30	1.495	400 m Individual Medley	293.40	499.20	1.701	
Average		1.452		Average		1.583	

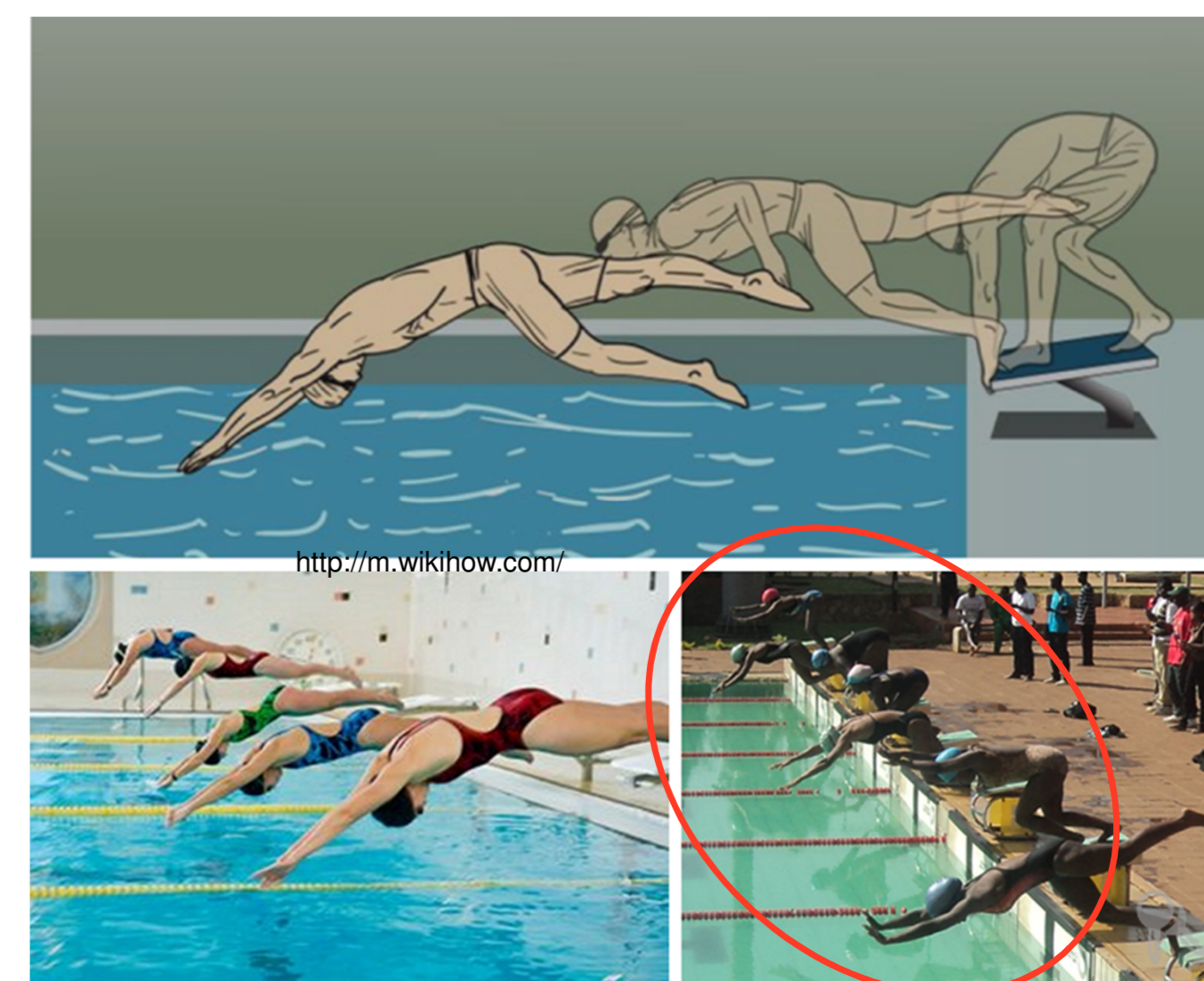


Figure 2; Reaction time and streamlined dive-off posture are vital in swimming competition. EAU athletes seem to have neglected these critical aspects in their training

Conclusions

While most of the fitness variables values met the recommended health levels, the training frequency and fitness did not meet the athletics levels recommended for high competitive levels. The study recommends that the East African universities swimmers enrich their training to get fit for their events, not to rely solely on fitness acquired in the swimming activities. Swimming talent scouting and development training programs should be put in place to enhance performance at competitive levels in the region, in line with recommendations and international standards.

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