Development of a Computerized App Based on Fitness Norms of University Students

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PURPOSE: To generate norms from a student fitness test database and develop a customized, computerized app for instructional use. **METHODS:** A total of 386 (158 ♂, 228 ♀) university students mean age (±SD) 23 (±7.2) years, enrolled in wellness courses, completed a health-related fitness test battery (sit-ups, push-ups, sit-and-reach, shoulder flexion, 12-minute run test). Predicted VO_{2max} was calculated from the 12-min run test. **RESULTS:** The data were ordered and compared with published norms. Quartile rankings are presented in the table below –

Quartiles	Sit-ups (#)		Push-ups (#)		Sit & Reach (cm)		Shoulder Flexion (cm)		Predicted VO_{2max} (ml/kg/min)	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
100	80	72	100	75	70	46	30	34	67	58
75	61	52	60	44	31	35	20	20	51	41
50	56	45	49	40	26	31	17	17	42	36
25	50	40	37	30	22	25	15	14	38	30

In comparison with age-gender norms, sit-ups values for males (55±9.83) ranked "average", while the women (45±12.19) ranked as "poor". In the push-up test, however, both males (48±16.46) and females (38±12.19) ranked as "excellent". Male and female average scores were ranked as "fair" in the sit and reach test (♂ 26.31±8.52; ♀ 29.87±7.47) and predicted VO_{2max} (♂ 43.87±9.8; ♀ 35.41±8.9). A computerized app was developed using a mobile website, which sent data to MySQL (an open source database), using PHP (a scripting language) middleware. The norm-referenced database was also included in the development of the app. **CONCLUSION:** A sample-specific, normative database was generated and used to develop the app. This app records test performance and determines norm-ranked fitness status.