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Out of the Press

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Peer-reviewed Journal Articles

DPST

Assessment of Cross-Contamination Risks Associated with the Use of Unlined Metal Cans with Fire Debris Containing Petrol in Oven Heating

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Abstract

Like many other countries, Sri Lanka also widely uses metal cans due to their low costs in addition to nylon bags to collect fire debris samples. However, the use of lined cans can introduce extraneous interfering compounds, due to the co-extraction of volatiles from the can's lining, which may lead to false data interpretation. To avoid this problem, unlined metal cans are recommended. Nevertheless, the use of unlined cans has another challenge since they are not completely airtight. Then, volatile compounds can escape and re-enter other unlined metal cans when storing, transporting, or oven heating. The presented study aimed to investigate this cross-contamination behaviour of unlined metal cans with fire debris samples containing different amounts of petrol subjected to oven heating. Sample concentration was done according to the ASTM E-1412 and analysis was carried out by GC/MS. Data interpretation was done as described in ASTM E-1618. Cross-contamination behaviour was found to be quite significant and had a relationship with the amount of petrol spiked.

About the Journal

ForensicAsia

www.afsn.asia/assets/images/articles/013%20AFSN%20ForensicAsia%2013th%20Issue_2023.pdf

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DSSPE

The Sit-Up test battery: Calculation of the energy expenditure

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Abstract

Sit-Up tests have been involved to measure the abdominal strength and endurance of youth and elite players in training sessions and specific skill tests. This study was aimed at evaluating the fitness level of the muscular strength and endurance of the abdominal and hip-flexor muscles of youth people corresponding to the body segment parameters: height and weight. The test battery and biomechanical model of the dynamic movement of Sit-Up were designed. The 30s Sit-Up test was performed by youth people: n = 1373 male and n = 1160 female. The percentile method was used to distinguish the performance levels. The average numbers of Sit-Up of males and females are 17 (SD = 2.17) and 12 (SD = 1.98), respectively. University students (68), who have already tested their fitness levels (satisfactory level or above) of muscular strength and endurance of abdominal and hip-flexor muscles by the Euro-fit test, were selected to show the validity of the test battery. Nearly 90% of students were at the average level or above relevant to the new Sit-Up test battery. The biomechanical model described the main active muscles' forces (Rectus Femoris: 0-900 N, Psoas 0-300 N, and Iliacus 0-295 N) and total mechanical energy expenditure (132.66 J: 70.72 J, 61.94 J concentric and eccentric movements, respectively; player: mass 67.5 kg and height 1.66 m) for any player. The new '30s Sit-Up test battery' is affective to evaluate reliable fitness levels for muscular strength, endurance of abdominal and hip-flexor muscles of youth. The biomechanical model demonstrates the energy expenditure for anyone (EAvg = 0.317 + 0.002 Cal).

About the Journal

Journal of Human Sport and Exercise

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Conference Proceedings

DNR

Patterns of distribution in endemic birds along a one-kilometer elevational gradient in the submontane zone of Sri Lanka

A. S. Adikari, S.J. Perera, S. S. Seneviratne

Abstract

Endemic species mostly are habitat specialists. Therefore, the survival of endemic species is limited by the availability of their preferred habitat. Along an elevational gradient, the distribution of endemics may vary depending on the geology, availability of resources, energy, and space. This study was carried out in order to investigate the distribution of endemic birds along an elevational gradient and understand the drivers behind any emerging patterns. The Issengard Biosphere Reserve, a submontane forest in Belihuloya, within the Ratnapura district, Sabaragamuwa province (6°42'50.93"N, 80°45'6.39"E) was used as the main study area. Encompassing nearly 1 km elevational gradient from 480 m (MSL) to 1420 m (MSL), ten horizontal line transects were established along the elevation. Bird counts, camera trapping, and mist netting were done for the data collection from August 2022 to April 2023 along the complete elevational gradient. The primary analysis was based only on bird counts reported; 752 total bird observations representing 21 endemic species, which encompasses 60% of the 34 endemic species found in Sri Lanka. Species richness, abundance, and diversity of endemics showed a hump-shape variation with their inter-quartile range spanning between 700 m -1100 m, along the elevational gradient due to the mid-domain effect, where species from both extremes were represented in mid-elevations. However, the montane forests at 1420 m showed higher values for the measured diversity and density parameters of endemics due to the local availability of a forest-bird favourable habitat. 29% of the recorded endemics were found along the complete gradient, while 71% were found above 1000 m elevations. The accumulation of endemics at higher elevations reflects topography-driven ecosystem isolation of endemics in the montane zone of Sri Lanka.

About the Conference

Proceedings of the 43rd Annual Sessions of Institute of Biology, Sri Lanka

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Institute of Biology, Colombo, Sri Lanka

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DNR

Responses of Avian Communities to a Submontane Elevational Gradient

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Abstract

Biogeography comprises the study of patterns of the geographic distribution of organisms and the factors which govern those patterns. An interacting group of different species in a particular location is called a community. Here we studied the avian community responses along the elevation gradient in a sub-montane forest and the drivers behind these responses. The study was implemented from the Samanalawewa river basin (480 m Mean Sea Level) to Haagala peak (1420 m MSL), at Issengard Biosphere Reserve, Belihuloya, in the Sabaragamuwa province. Along the 10 horizontal line transects at 100 m intervals, bird identification, measuring vegetation, and habitat parameters were conducted for nine months, collecting data in the complete elevation gradient every month. A total number of 97 bird species were recorded along the elevation gradient, including 86 resident, 21 endemic, 19 threatened, 7 montane, and 11 migratory species. Adding evidence to the mid-domain effect, species richness, abundance, and diversity of birds indicated the hump-shaped variation along the elevation gradient. Both species richness and Shannon Wiener diversity have shown the highest values at 700 m MSL and the highest value in abundance at 580 m MSL. Above 0.8 higher Shannon Wiener evenness value shows ecosystem stability at each elevation. Habitat complexity, tree height, and canopy cover, as well as several avian community parameters, had shown similar patterns of variations along the elevation gradient. Hence, the responses of avian communities along the elevation gradient are supported by vegetation and habitat topography. The leeward side of the forest patch at the highest elevation has contributed to enhancing the faunal and floral community assemblages resulting increment in species richness, habitat complexity, tree height, and canopy cover at the highest elevation.

About the Conference

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DSSPE

Identifying the improvement of Gross Motor Skills of preschool children in Monaragala district

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Abstract

Gross Motor Skills (GMS) are the foundations for more complicated motor abilities and movement patterns, and the underlying performance competency required for many types of physical exercise. This study was to identify the improvement of GMS of preschool children in the Monaragala district. Forty Students (n=40) participated from two preschools (30 in the treatment group and 10 in the Control group). GMS was tested using the Test of Gross Motor Development (TGMD-2). Including six skills per subset and there were two subsets. Loco Motor Skills(LMS) (run, gallop, hop, leap, horizontal jump, and slide) and Object Control Skills (OCS) (striking a stationary ball, stationary dribble, catch, kick, overhead throw, and underhand roll). The gathered data were analyzed using, Pearson correlation, paired-sample T-test, and independent T-sample test in SPSS (V22) software and Microsoft Office 2013. According to the results, the paired t-test and independent t-test were utilized to achieve the main objective. Paired t-test showed that there is a significant difference between the pre-test and post-test in the LMS score (P-value 0.000<0.05), OCS score (P-value 0.000<0.05) in the treatment group, and LMS score (P-value 0.024<0.05) in the Control group. There is no significant difference in the OCS score (P-value 0.274>0.05) in the Control group. Finally, an independent t-test revealed that the mean difference of the treatment group is greater than the control group in both LMS (11.87 > 0.60) and OCS (11.03 > 0.30). It could be concluded that there is an improvement in the GMS of treatment group because of the training.

About the Conference

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Impact of low energy availability and menstrual dysfunction of women's kho – kho national team in Sri Lanka

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Abstract

Kho - Kho is a very strategic and difficult sport and it is one of the two most widely used traditional tags. Low Energy Availability (LEA) (with or without disordered eating) and Menstrual Dysfunction (MD) common among young women who participate in sports. This study aimed to identify the impacts of low energy availability and menstrual dysfunction of the Sri Lanka National Women Kho -Kho team. A descriptive cross-sectional research design was used to this study. A total of 15 national female Kho-Kho players who aged between 26 to 30 were recruited in the study according to total sampling method. LEA was measured using 3 days' diary recall, 3days physical activity log. Eating Disorders (ED) were assessed using EDE-Q, menstrual dysfunction was assessed using the LEAF-Q standard questionnaire. The data were analyzed by using SPSS software kruskal-wallis test. According to that analysis, LEA was highly prevalent among the athletes (87%) and EA (13%). EDs were highly related to the shape concern (33.33%) and weight concern (26.66%) among athletes. MD percentage of the Kho-Kho team was reported as a 13.33%. Therefore, athletes in Sri Lanka National Women's Kho-Kho team should be made aware primary amenorrhea (20%), secondary amenorrhea (6.66%), oligo menorrhea (13.33%), and menorrhagia (26.66). The MDs were prevalent among the athletes at a level that should take attention. The study's findings allow us to draw the conclusion that the athletes in Sri Lanka's National Kho-Kho team have serious issues. When considering the menstrual dysfunctions among the selected athletes, it can be recommended that they have to pay more attention regarding the nutrition intake which affect the menstrual function as higher number of issues of menstrual cycle were reported among LEA athletes. Especially LEA among athletes of this condition, and further remedies should be taken to prevent the risk factors of LEA and MD and regular inspection should be performed on the risk factors to enhance their overall health.

About the Conference

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