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目　錄

橄欖球國際賽事中球員間身體素質之比較：以 2023 年十五人制世界橄欖球錦標賽與七人制世界橄欖球系列賽為例

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摘要

自 2016 年奧運會將橄欖球七人制納入正式比賽項目，提高全球參與人數。本研究收集了 2023 年分別代表著全球最高橄欖球等級：世界橄欖球十五人制錦標賽 (World Rugby Cup 2023) 及世界七人制橄欖球系列賽 (World Rugby Sevens Series) 前四強的隊伍，分析並比較各隊球員身高、體重、身體質量指數 (body mass index, BMI) 和年齡等數據與亞洲代表的日本隊，結果顯示，十五人制前四強國家中，只有南非和阿根廷的後衛球員比日本的年齡顯著較低，而身高、體重及 BMI 與日本球員相比均無差異。七人制前四強國家中，除了紐西蘭外，阿根廷、斐濟、法國及日本十五人制的前鋒隊員之身高顯著高於該國的七人制全隊隊員，整體而言，前四強球員與日本球員的身體素質並無顯著差異，隨著全球化的訓練資訊網路共享，各國教練能夠學習並採用相似的訓練方法，以提升球員的體能和技術水平，這可能是導致身體素質差異並非決定成績的重要原因之一，不管七人制或十五人制球員，技術與體能的訓練才是致勝的主要關鍵。

關鍵詞：橄欖球賽、七人制、十五人制、身體質量指數

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壹、緒論

一、前言

橄欖球是現今一項全球流行的運動，七人制和十五人制橄欖球兩種賽制均廣受歡迎。自 2000 年七人制橄欖球創立後，參與人數和關注度逐漸提升，尤其在 2016 年奧運會納入了七人制橄欖球賽的項目後，更提高了全球知名度。七人制和十五人制橄欖球在比賽規則和場地有些相似性，但兩者間的比賽時間、人數和休息時間有明顯差異，然而兩種賽制的運動員都需要高技能的身體接觸性運動，如：踢球、傳球、撞擊、改變方向、衝刺等 (Pasin et al., 2017)；在技能方面，如：正集團 (Scrum)、擒抱 (Tackle)、爭邊球 (Line-out)、傳球 (Pass) 和亂集團 (Ruck、Maul) 等，但在戰術運用和球員體能需求上則不相同 (陳興一 , 2001) 。在競技橄欖球選手中，根據球員位置可能存在身體組成方面的差異，但目前了解仍有限。本研究擬比較七人制和十五人制橄欖球隊的世界前四強與亞洲最具實力的日本隊球員的身型與年齡。再進一步比較世界前四強的七人制與該國十五人制球員的身型與年齡之差異。

紐西蘭、南非、阿根廷和英格蘭長期在國際橄欖球賽事中名列前茅，具有高度專業化的訓練體系和豐富的比賽經驗，代表了世界橄欖球運動的最高競技水平。日本隊為亞洲地區橄欖球運動的領軍隊伍，因此，本研究透過比較亞洲與世界頂尖橄欖球隊球員的身型（如身高、體重）和年齡作為核心指標。這些指標是衡量運動員體能和競技能力的重要參數，能夠直觀反映不同賽制下球員的體能需求和身體素質特徵。例如，較高的身高和體重可能與前鋒球員在比賽中的優勢相關，而年齡則可能影響運動員的體能狀況和比賽經驗。藉由這些指標的比較，可以分析不同國家和賽制的球員在身體素質上的具體差異，並探討這些差異如何影響比賽表現，可提供亞洲橄欖球的發展之參考。

二、橄欖球運動之簡介

十五人制橄欖球運動係由兩支 15 名球員組成的隊伍參與，包括：8 名前

鋒 (Forwards) 分別為鬆頭支柱 (Loose-head Props) 1 名、鉤球員 (Hooker)1 名、緊頭支柱 (Tight-head Prop) 1 名、鎖柱 (Second row) 2 名、側翼邊鋒 (Blind-side flanker 與 Open-side flanker) 2 名及 8 號球員 (Number 8) 1 名；7 名後衛分別為傳鋒 (Scrum-half) 1 名、傳接鋒 (Fly-half) 1 名、內中鋒 (Inside centre) 1 名、外中鋒 (Outside centre) 1 名、左翼鋒 (Left Wing) 1 名、右翼鋒 (Right wing) 1 名和殿衛 (Full-back)1 名。

七人制橄欖球運動由兩支 7 名球員組成的隊伍參與，包括：鬆頭支柱 (Loose-head prop) 1 名、鉤球員 (Hooker) 1 名、緊頭支柱　(Tight-head Prop) 1 名、傳鋒 (Scrum-half) 1 名、傳接鋒 (Fly-half) 1 名、中鋒 (Center) 1 名、翼鋒 (Wing) 1 名。

依據國際橄欖球協會 (World Rugby Laws of the Game: Sevens Variations, 2023) 之規定，十五人制比賽每半場為 40 分鐘，中場休息時間為 15 分鐘，比賽完一場後通常有 5 至 7 天的恢復休息。而七人制每半場比賽僅 7 分鐘，中場休息時間為 2 分鐘，通常在 2-3 天內可進行 5-6 場比賽。

三、訓練目標

橄欖球是一項以高強度奔跑、身體碰撞和防守動作為特徵的團隊競技運動，運動表現依賴於多項運動要素，包括：有氧和無氧適應能力、肌肉力量、動力、速度和敏捷性 (Argus et al., 2012) 。比賽目標在於將橄欖球成功推進至對手的達陣 (touchdown) 區域以爭取得分 (Crewther et al., 2020)。比賽的過程包括：高強度衝刺的時段（例如：短跑和傳球）與低強度的衝刺交替進行（例如：行走和慢跑），以十五人制為例，球員在進攻和防守階段都能迅速加速、減速和改變方向，先前的研究凸顯了極大化速度、敏捷性和力量的重要性，顯示不同的訓練方法，如：力量訓練、傳統短跑訓練或彈跳運動，均能增加下肢力量，從而提高短跑速度和加速度 (Sinclair et al., 2021)，因此，橄欖球專項訓練需要結合耐力、力量、技巧和速度等多方面素養。

橄欖球七人制雖然和十五人制橄欖球賽採用相同的規則和球場尺寸，但

由於每隊只有七名球員，相較於十五人制，其場地較為寬敞，七人制球員每分鐘進行的擒抱和帶球撞擊的次數都比十五人制的球員為多，且前鋒比後衛經歷更多的碰撞和擒抱。因此，七人制橄欖球是一項極富挑戰性的運動，對於無氧糖解和有氧氧化能量系統的要求都相當高 (Granatelli et al., 2014) 。球員須具備優秀的加速和減速能力，以進攻（擊敗對手、開創進攻機會）和防守（進行阻擋、執行擒抱）中取得成功 (Ross et al., 2015)。七人制比賽每分鐘的總移動距離約高出十五人制 45%，高速衝刺移動距離的需求更是十五人制的兩倍以上 (Higham et al., 2012) 。七人制的訓練應包括於疲勞狀態下進行的與碰撞有關的（衝擊、閃避和防守）練習，以培養耐受力和減輕碰撞負荷的移動策略 (Lee et al., 2022)。

四、橄欖球選手身體素質之特殊性

橄欖球球員最佳的身體組成依所擔任的位置而有所不同 (Brazier et al., 2020)，球員須要透過增強肌肉力量、速度能力、靈活性和耐力等，以提升運動表現。以十五人制為例，後衛球員在獲得前鋒傳球後，必須掌控球權並迅速脫離對手球員，以創造得分機會，同時在防守時提供適當的移動 (Lindsay et al., 2015)，因此，速度和耐力對於後衛球員而言是最重要的運動能力。後衛球員通常呈現較低的體脂量 (Fontana et al., 2015)，因為體脂會妨礙加速、速度、傳球技巧和體溫調節 (Cheng et al., 2014)。然而，對於前鋒球員來說，要在體重和高強度奔跑兩種相反的能力之間找到平衡極為困難，他們須要更高的體重，因為這與在撞擊和防守中產生的力量強烈相關，因此，理想情況下，體重必須較高且身形龐大，同時保持高強度奔跑的能力 (Sato et al., 2023)。根據研究結果顯示，前鋒球員在體重、身高以及體脂肪比例和皮褶 (skinfold)　總和方面均顯著高於後衛球員 (Sarkar & Dey, 2019)。關於不同水準球員身體組成之間的差異，研究顯示瘦體質量與跳躍能力和短跑之間存在中等到強烈的正相關 (Waldron et al., 2014)，而皮褶厚度與傳球能力之間存在中度負相關 (Gabbett et al., 2011)。

另一方面，有關七人制橄欖球員身體特徵的研究顯示，後衛比前鋒更輕盈

且身高較矮，然而所有位置的球員均呈現精瘦的體態結構 (Ross et al., 2014)。一項系統性回顧報告指出，七人制橄欖球選手在身高、體重方面較高且呈現較低的體脂質量和皮摺厚度 (Sella et al., 2019)。過去研究亦發現，七人制的後衛和前鋒在身體對抗能力上僅具微小差異，前鋒參與較多接觸的機會，而後衛則執行較多高速移動、操控球和傳球動作。前鋒通常稍微更為龐大和強壯，或許是由於橄欖球比賽中的定位要求，儘管這些差異不如在十五人制橄欖球中那般顯著 (Mitchell et al., 2016)。

橄欖球員的表現受到多方面因素的影響，包括個人技術水平、團隊戰術、認知觀念和身體素質。前鋒注重身體接觸和碰撞，以贏得優勢，而後衛則注重持球、傳球、踢球以及靈活的移動 (Donkin et al., 2020)。在不同年齡組別的橄欖球隊員中，身體量測數值、生理特徵和比賽技能的表現已顯示明顯差異 (Durandt et al., 2018)。然而，有鑑於年輕和年長運動員之間的表現差異，可能與生長和發育的過程、神經和內分泌系統的變化、肌肉和骨骼形態的改變，以及新陳代謝的變化等因素皆有關 (Smart & Gill, 2013)。同時，隨著年齡的提高，測試項目的改善也有可能反映出比賽經驗、訓練或兩者結合的差異 (Durandt et al., 2018)。

貳、研究方法

一、資料收集

本研究收集了 2023 年代表全球最高橄欖球水平的十五人制與七人制系列賽事中隊員的身高、體重和年齡等數據。十五人制球隊的數據來源於 2023 年世界十五人制橄欖球錦標賽 (RUGBY World Cup France 2023) 的前四強隊伍：紐西蘭、阿根廷、英格蘭和南非，以及亞洲地區唯一參賽的日本隊。七人制球隊的數據則來源於 2022-2023 年度世界七人制橄欖球系列賽 (HSBC World Rugby Sevens Series Standings) 總排名前四的國家隊：紐西蘭、阿根廷、斐濟和法國，同時也納入了在 2022 年巡迴賽中代表亞洲地區參賽的日本隊。儘管日本隊在

七人制賽事中的排名未能進入前列，但其在亞洲地區的表現使其成為有價值的參考對象。本研究收集 2023 年橄欖球世界盃和 2022 年匯豐七人制橄欖球錦標賽期間，透過網路搜尋獲取每個國家隊球員的身高、體重和年齡等資訊，並計算選手的身體質量指數 (Body Mass Index, BMI) 以進行比較分析。明確數據的來源與收集時間點，並結合了指定的賽事作為基準。

二、統計分析

本研究使用 SPSS for Windows 20.0 版統計軟體進行數據分析，所有數據皆以平均值 ± 標準差表示。為了分析不同國家之間十五人制或七人制橄欖球員在各項數值上的差異，研究採用了獨立樣本單因子變異數分析 (one-way ANOVA)。而對於同一國家內十五人制與七人制球員之間的數值差異，則使用獨立樣本 t 檢定，顯著性水準設定為 $p < 0.05$。本研究的數據來源包括公開的賽事報告、2023 年世界橄欖球錦標賽 (RUGBY World Cup France 2023)、世界七人制橄欖球系列賽 (HSBC World Rugby Sevens Series Standings) 的球員資料庫以及各國橄欖球協會的官方網站。這些數據來源經過嚴格的篩選和審核，以確保其準確性與可信度。數據處理過程中，研究團隊對每位球員的數據進行了詳細的清理與校對，排除了潛在的異常值和錯誤資料，以提高統計分析結果的可靠性。在統計分析過程中，針對不同國家之間的比較，首先使用了 Levene's Test 檢驗數據的方差同質性，以確保單因子變異數分析 (ANOVA) 的前提條件得以滿足。當 ANOVA 顯示組間差異達到顯著性時，進一步進行事後檢定（Post Hoc Test），以確定具體差異的國家組合。對於獨立樣本 t 檢定，同樣檢查了樣本間方差的同質性，並在發現方差不均的情況下，應用 Welch's t 檢定來進行調整，以保證結果的準確性。

參、結果

世界十五人制橄欖球隊前四強國家隊與亞洲代表日本隊隊員的身體素質與

年齡之比較結果顯示，只有南非和阿根廷兩國後衛球員的年齡顯著低於日本後衛球員，另外，四強各國球員的身高、體重及 BMI 與日本球員相比皆無顯著差異（表 1）。

世界七人制橄欖球賽的前四強國家隊與亞洲代表日本隊球員身體素質與年齡之比較結果顯示，成績排名第一的紐西蘭，其選手之平均身高優於其他國家選手，且與日本選手具顯著差異，而其他各國選手之身高則與日本選手未達顯著差異。另外，四強各國球員的體重、BMI 及年齡與日本隊球員均無顯著差異（表 2）。

進一步分別比較七人制世界橄欖球賽前四強國家及日本隊的全隊隊員與該國十五人制橄欖球隊之全隊隊員、前鋒球員、後衛球員之身體數值與年齡，結果顯示除了紐西蘭外，阿根廷、斐濟、法國及日本各國的十五人制橄欖球隊的前鋒隊員之身高顯著高於七人制橄欖球隊之全隊隊員。所有四強國家隊及日本隊的十五人制橄欖球隊全隊隊員及或前鋒隊員的體重及 BMI 值皆顯著高於七人制全隊隊員。另外，在年齡方面，只有紐西蘭與法國兩國的十五人制橄欖球隊的前鋒隊員顯著高於該國的七人制全隊球員，而其他國家十五人制與七人制球員間的年齡則無顯著差異（表 3）。

肆、討論

本研究主要發現十五人制世界橄欖球賽的前四強國家中，只有南非和阿根廷的後衛球員顯著較日本隊球員年輕。這可能是由於南非有豐富的橄欖球歷史和文化，更注重發掘和培養年輕的潛力選手；而阿根廷隊員之顯著年輕，可能與其參與南半球高水平比賽（如：橄欖球錦標賽）的機會較多有關，使球員能夠經常與頂尖球隊交手，這有助於年輕球員的成長。七人制橄欖球前四強國家中，只有紐西蘭的球員身高顯著優於日本球員，但在其他身體素質方面，各國球員與日本球員之間並無顯著差異，此顯示無論是七人制或十五人制橄欖球，訓練技術與體能的部分才是致勝的主要關鍵。

七人制橄欖球全隊隊員的身體素質、年齡與該國十五人制不同位置球員之

比較，結果顯示阿根廷、斐濟、法國及日本這四幾國的十五人制的前鋒球員身高顯著高於該國的七人制全隊球員，然而紐西蘭、阿根廷、斐濟、法國及日本十五人制的後衛球員與該國的七人制全隊球員的體重、BMI、年齡則相似。

隨著網路資訊的發達，全球化的訓練資訊共享，使得各國教練能夠學習和採用先進的訓練方法，進而提升球員的體能和技術水平，這可能是導致不同國家之間選手身體素質差異縮小的重要原因之一。此外，未來可以納入更多的生理指標（如肌肉質量、體脂率等）進行分析，以更全面地了解不同體格特徵對比賽表現的具體影響。

先前有研究透過全球定位系統 (Global Positioning System, GPS) 清楚了解每場橄欖球十五人制比賽中運動員的總跑動距離，結果顯示於國際級別比賽中，平均每場總距離在 5759 ~ 6792 公尺之間，每分鐘跑動距離為 67.6 ~ 75.1 公尺，而在職業俱樂部等級，平均每場總距離為 5476 ~ 6316 公尺，每分鐘跑動距離為 67.8 ~ 71.9 公尺 (Bridgeman & Gill, 2021)。研究指出橄欖球中不同位置的選手，在位置角色上存在著獨特的要求 (Brazier et al., 2020)。如在十五人制具職業水準的橄欖球球員中，前鋒與後衛球員的移動速度並無顯著差異，但前鋒球員須在平均持續時間內表現出更好的加速度和減速度 (Johnston et al., 2019)。前鋒球員在比賽中較多地參與撞擊、亂集團和爭球，而後衛球員則在比賽時間內參與更多持球奔跑，並移動較多總距離和高速衝刺距離 (Paul et al., 2022)。相對於前鋒球員，後衛球員在總距離、每分鐘移動距離和高速衝刺距離上表現出更大的移動距離 (Bridgeman & Gill, 2021)，因此，後衛球員須要保持較瘦的體態、更快的反應速度和優越的有氧耐力，以應對防守，在機動性上制敵，並須移動更遠的距離，進行更多次的快速奔跑，最終創造得分機會 (Smart et al., 2014)。在國際賽事和世界盃比賽中取得優越表現的隊伍，往往擁有較高大體型的球員，尤其是較壯的前鋒和較高的後衛 (Barr et al., 2014)

七人制橄欖球的比賽強度明顯高於十五人制，在 2-3 天內進行 4-6 場比賽，隨著比賽的進行，球員的體能表現可能會顯著下降，比賽後期碰撞的情況增加，疲勞恢復監控就顯得無比重要，尤其是利用球員輪換／替換策略，可以減少因疲勞而增加的嚴重受傷風險。一個針對七人制法國橄欖球國家代表隊的研

究顯示，每場比賽的跑動總距離為 1361 ~ 1459 公尺，每分鐘跑動距離為 97.2 ~ 104.2 公尺 (Peeters et al., 2019)。而針對新加坡國家隊的研究則指出，參加 2015 至 2016 年七人制亞洲橄欖球巡迴賽，每場比賽的跑動總距離為 1305 ~ 1531 公尺，每分鐘跑動距離為 93.2 ~ 109.4 公尺 (Lee et al., 2022)。七人制橄欖球的總距離跑動需求和高速跑動距離 (81-123 m/min, 約 17%) 被證實高於十五人制 (56-81 m/min, 約 5-12%) (Hogarth et al., 2016)。此外，根據比賽後的報告，七人制橄欖球比賽後會出現顯著的代謝變化，包括：血液 pH 值下降約 1.6%、碳酸氫鹽 (HCO3-) 減少約 44%，血乳酸濃度增加約 380%，另一個研究也證明，七人制橄欖球運動員的血乳酸濃度可達 16.3 mmol·L-1，並伴隨著高水平的酸中毒 (pH 值低於 7.2) (Peeters et al., 2019)，如果肌肉酸中毒就會大大削弱運動員在高速下移動的能力，是影響七人制比賽中跑動表現的主要因素 (Lee et al., 2022)。

研究限制

本研究受限於資料取得，僅對紐西蘭、阿根廷、斐濟、法國和日本等特定國家的十五人制和七人制橄欖球隊員的身高、體重、BMI 等身體素質指標及年齡進行比較分析。由於數據僅來自於少數幾個國家，且僅限於特定賽制，這可能會影響研究結果的普遍性，無法全面代表全球橄欖球選手的身體素質多樣性。未來可擴大研究範圍至更多國家的球隊，將有助於提高結果的代表性和普遍性。此外，僅考慮身高、體重和 BMI 等基本指標，可能無法充分反映橄欖球選手身體素質的實際狀況。未來的研究應考慮納入更多的生理指標，如肌肉質量、體脂率等，以提供更全面和深入的分析。如果能更準確地瞭解身體素質與橄欖球運動表現之間的關係，並深入分析各國橄欖球選手的選拔、培訓機制，將有助於橄欖球訓練和比賽策略的優化，提供更有力的實際應用價值。

表 1

不同國家十五人制橄欖球隊員身體數值與年齡之比較

國家		身高	體重	BMI	年齡	樣本數 n
全隊	南非	186.0 ± 9.5	100.5 ± 14.5	29.0 ± 3.4	29.8 ± 3.5	33
	紐西蘭	187.9 ± 7.4	106.4 ± 16.2	30.0 ± 3.5	27.8 ± 3.6	32
	英格蘭	186.4 ± 7.2	104.2 ± 13.5	29.9 ± 3.0	27.9 ± 4.4	33
	阿根廷	186.2 ± 7.3	99.6 ± 15.4	28.7 ± 3.7	28.0 ± 4.7	31
	日本	183.0 ± 8.2	100.6 ± 14.2	29.9 ± 2.9	28.7 ± 4.2	33
前鋒	南非	189.1 ± 10.4	110.3 ± 10.4	31.3 ± 2.8	31.0 ± 3.3	18
	紐西蘭	191.0 ± 6.3	117.3 ± 10.9	28.4 ± 3.9	32.2 ± 3.0	18
	英格蘭	189.3 ± 6.9	113.1 ± 8.7	27.7 ± 4.0	31.6 ± 2.5	19
	阿根廷	189.4 ± 6.4	111.1 ± 9.7	27.7 ± 5.1	31.1 ± 3.4	17
	日本	186.8 ± 6.6	109.8 ± 8.2	29.0 ± 4.4	31.5 ± 2.7	19
後衛	南非	182.3 ± 7.0	88.7 ± 0 8.8	28.1 ± 3.7	26.7 ± 1.6*	15
	紐西蘭	184.0 ± 6.9	92.3 ± 0 9.6	27.1 ± 3.3	27.2 ± 1.7	14
	英格蘭	182.4 ± 5.7	92.0 ± 0 8.3	28.4 ± 4.9	27.7 ± 2.0	14
	阿根廷	182.3 ± 6.5	85.7 ± 7.1	28.4 ± 4.3	25.8 ± 1.1*	14
	日本	177.4 ± 7.0	88.1 ± 10.7	28.4 ± 4.0	27.9 ± 1.8	14

* 號為與日本隊有顯著差異。

表 2

不同國家七人制橄欖球隊員身體數值與年齡之比較

國家		身高	體重	BMI	年齡	樣本數 n
全隊	紐西蘭	187.6 ± 4.3*	92.1 ± 7.0	26.1 ± 1.1	27.5 ± 4.1	12
	阿根廷	183.0 ± 7.3	87.6 ± 11.1	26.1 ± 2.2	25.3 ± 4.2	12
	斐濟	181.2 ± 8.6	88.9 ± 11.3	27.1 ± 3.2	28.9 ± 3.5	13
	法國	184.8 ± 8.7	89.8 ± 9.1	26.3 ± 1.2	25.4 ± 3.0	13
	日本	178.7 ± 5.4	87.3 ± 7.5	28.0 ± 4.4	27.3 ± 1.4	13

* 號為與日本隊有顯著差異。

表 3

同一國家七人制橄欖球比十五人制 橄欖球隊員身體數值與年齡之比較

國家	組別	身高	體重	BMI	年齡	樣本數 n
紐西蘭	7 (全隊)	187.6 ± 4.3	92.1 ±0 7.0	26.1 ± 1.1	27.5 ± 4.1	12
	15(全隊)	187.9 ± 7.4	106.4 ± 16.2**	27.8 ± 3.6*	30.0 ± 3.5	32
	15(前鋒)	191.0 ± 6.6	117.3 ± 10.9***	28.4 ± 3.9*	32.2 ± 3.0**	18
	15(後衛)	184.0 ± 6.9	92.3 ±0 9.6	27.1 ± 3.3	27.2 ± 1.7	14
阿根廷	7(全隊)	183.0 ± 7.3	87.8 ± 11.1	26.1 ± 2.2	25.3 ± 4.2	12
	15(全隊)	186.2 ± 7.3	99.6 ± 15.4*	28.7 ± 3.7*	28.0 ± 4.7	31
	15(前鋒)	189.4 ± 6.4*	111.1 ±0 9.7***	31.1 ± 3.4***	27.7 ± 5.1	17
	15(後衛)	182.3 ± 6.5	85.7 ±0 7.1	35.8 ± 1.1	28.4 ± 4.3	14
斐濟	7(全隊)	181.2 ± 8.6	88.9 ± 11.3	27.1 ± 3.2	28.9 ± 3.5	13
	15(全隊)	184.6 ± 8.3	99.9 ± 14.4*	29.3 ± 3.6**	26.7 ± 3.3	31
	15(前鋒)	188.4 ± 6.4*	110.4 ± 10.5***	31.2 ± 3.6**	27.1 ± 3.3	16
	15(後衛)	180.6 ± 8.4	88.6 ± 7.9	27.2 ± 2.3	26.6 ± 3.4	15
法國	7(全隊)	184.8 ± 8.7	89.8 ± 9.1	26.3 ± 1.2	25.4 ± 3.0	13
	15(全隊)	186.9 ± 7.9	103.3 ± 15.7***	29.5 ± 3.4***	27.0 ± 3.0	33
	15(前鋒)	191.1 ± 7.4*	114.4 ± 10.6***	31.4 ± 3.3***	27.8 ± 2.9*	19
	15(後衛)	181.3 ± 4.3	88.5 ± 6.7	26.9 ± 1.4	26.1 ± 2.9	14
日本	7(全隊)	178.7 ± 5.4	87.3 ± 7.5	27.3 ± 1.4	28.0 ± 4.4	13
	15(全隊)	182.8 ± 8.2	100.6 ± 14.2***	30.0 ± 2.9***	28.7 ± 4.2	33
	15(前鋒)	186.8 ± 6.8***	109.8 ± 8.2***	31.5 ± 2.7***	28.9 ± 4.4	19
	15(後衛)	177.4 ± 7.0	88.1 ± 10.7	27.9 ± 1.8	28.4 ± 4.4	14

與同一國家七人制（全隊）比有顯著差異。

*:< 0.05;**:< 0.01;***:< 0.001。

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The Comparison of Physical Attributes among Players in International Rugby Competitions: A Case Study of 2023 15-a-Side Rugby World Cup and 7-a-Side World Rugby Series

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Abstract

Since rugby sevens was officially included as a competition event in the 2016 Olympic Games, global participation has significantly increased. This study collected data from the top four teams representing the highest level of rugby in 2023: the World Rugby Cup 2023 (fifteen-a-side) and the World Rugby Sevens Series, and analyzed and compared the height, weight, body mass index (BMI), and age of players from each team with those of the Asian representative, Japan. The results showed that among the top four fifteen-a-side teams, only the backs of South Africa and Argentina were significantly younger than those of Japan, while there were no differences in height, weight, and BMI compared to Japanese players. Among the top four sevens teams, except for New Zealand, the forwards of Argentina, Fiji, France, and Japan's fifteen-a-side teams were significantly taller than the entire sevens squads of these countries. Overall, there were no significant differences in physical attributes between the top four teams and the Japanese players. With the global sharing of training information through networks, coaches worldwide can learn and adopt similar training methods to enhance players' physical and technical levels. This may be one of the reasons why differences in physical attributes are not a decisive factor in performance outcomes. Regardless of whether they are sevens or fifteen-a-side players, technical and physical training remains the key to victory.

Keywords: rugby, sevens, fifteens, body mass index

Analysis of Perceived Values in Participation in the Central Region University Sports League Event

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Abstract

Purpose: The purposes of this study were threefold: to develop the "Perceived Values Scale for the Central Region University Sports League Event," to examine the potential differences in perceived values among participants with different demographic characteristics and participation behaviors, and to assess the predictive power of perceived values on participants' intentions for future participation. Methods: The participants were athletes who registered for the general division of the 2020 Central Region University Sports League Basketball Tournament (CRUSLBT). The instruments included the newly-developed perceived values scale, demographic characteristics, participation behaviors, and items related to future participation intentions. The data were analyzed through principal component analysis, internal consistency analysis, *t*-test, one-way ANOVA, and multiple regression analysis. Results: The results revealed that: (1) Principal component analysis extracted three factors, namely developmental value, educational value, and transmission value based on the loaded items. Internal consistency analysis showed excellent internal consistency for all three extracted factors. (2) Higher-grade participants perceived higher developmental value from participating in the tournament, while those with previous participation exhibited greater awareness of the developmental and transmission values. Additionally, starting players demonstrated heightened perceptions of developmental, educational, and transmission values. (3) The regression model composed of developmental, educational, and transmission values accounted for 33% of the variance in future participation intentions, with developmental value being a significant predictor. Conclusion: Based on the results, the researchers provide recommendations to the league organizing committee for enhancing event management as well as to other sports organizations engaged in similar events.

Keywords: intercollegiate league, home and away game system, Olympic education, sportsmanship

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Introduction

Contemporary Trends in Sports in Taiwan

In recent years, Taiwan's sports culture has seen significant growth in tandem with the rising awareness of national health. According to the 2019 Sports Participation Survey by the Sports Administration, Ministry of Education, the participation rate in sports in Taiwan is as high as 82.8%, with a regular sports participation rate of 33%; this consistent high participation rate for over thirteen years reflects the government's commendable efforts in promoting national sports policies (Sports Administration, Ministry of Education, 2020). Among various sports activities, competitive sports, in particular, have garnered significant attention. Outstanding athletes contribute significantly to the country's economy, culture, and image. Therefore, the Taiwanese government actively organizes sporting events to cultivate talented athletes and enhance the nation's athletic prowess (Huang et al., 2014).

As Yen (2000) pointed out, the burgeoning sports and leisure culture has also extended to higher education, linking collegiate sports with national sports. Sports clubs have increased noticeably on university campuses, contributing to a thriving sports atmosphere. Within this atmosphere, participation in university sports club activities is most concentrated in basketball, volleyball, and badminton (Sports Administration, Ministry of Education, 2019). According to the investigation from the Sports Administration, Ministry of Education (2018), basketball ranks fifth among the most commonly practiced sports activities in the general population, making it the most popular ball sport. Among males aged 18 to 24, basketball is the most frequently practiced sport, with a participation rate of 14%. To align with contemporary sports trends and the enthusiastic demands of the public, universities and relevant sports organizations actively host various basketball events, ranging from interclass, interdepartmental, and intercollegiate leagues under the guidance of the Sports Administration, Ministry of Education. This reflects the prevalence of basketball and related events among the

collegiate community.

School sports serve as the cradle of grassroots sports, and during university years, it is the golden period for students' sports development (Chen & Tsai, 2017). A pertinent study has shown that students' participation in sports during their university years brings numerous benefits in terms of social, intellectual, and physical aspects (Lower-Hoppe et al., 2020). The dual educational experience students gain in both the classroom and on the sports field contributes to personal growth (Osborne et al., 2020). Chalfin et al. (2015) also noted that students' participation in competitive sports during university enhances participation in learning, character development, cognitive development, self-esteem, and graduation rates. This unique set of experiences is challenging to replicate through other educational avenues (Weight et al., 2012).

The Central Region University Sports League

In response to the aforementioned trends, the National Taiwan University of Sport, in alignment with the national sports policy, collaborated with 21 universities in the central region of Taiwan to establish the Central Region University Sports League (CRUSL) in 2015 (Taichung City Government, 2015). The league's primary goal is to promote sports exchanges among institutions in the central region, with the hope that athletes can compete and learn from each other. It also takes advantage of the National Taiwan University of Sport's rich history in sports education to serve as a pioneer in promoting sports. By hosting the league events, the CRUSL aims to foster the concept of grassroots sports development, enhance athletic competitiveness, cultivate a collegiate sports culture, promote the Olympic spirit, and set examples as sports role models (Central Region University Sports League, 2019).

The league's inaugural event, the Central Region University Sports League Basketball Tournament (CRUSLBT), was organized with the collaborative guidance of various entities, including the Sports Administration, Ministry of Education,

Taichung City Government, the Chinese Taipei University Sports Federation, the Chinese Taipei Olympic Committee, and the Central Region Educational Resource Center. Notable features of the tournament include the home and away game system, live broadcasts, comprehensive game statistics, and Olympic education lectures, all of which contribute to the overall quality of the tournament. Through the well-designed competition formats and contents, not only does the tournament enhance its completeness, but it also allows athletes to derive deeper meaning and values from every detail of their participation (National Taiwan University of Sport, 2020).

Literature on the Perceived Values of Sporting Events

Every sporting event serves a purpose and holds significance, but the purpose and significance can vary depending on factors such as the scale, nature, timing, and geographical location of the event. Participants in sporting events include organizers, spectators, and athletes, each of whom perceives and experiences the event differently. Regardless of the roles, understanding the inner feelings of participants is crucial when exploring the perceived values of sporting events (Fang et al., 2012). In light of a review of literature related to the perceived values of sporting events, Hsu (2005) asserted various purposes and meanings of organizing sporting events. These include the educational, sports spirit, and moral aspects of sporting events, the emphasis on fairness and justice, the promotion of sports for the public, the enhancement of athletic skills and the development of sports talents, the fostering of a free and inclusive spirit among the populace, and the promotion of mutual understanding and care among international communities. Huang (2007) analyzed the meaning of sporting event through sports literature (i.e., written materials, documents, and texts related to sports) and proposed that sporting event is multifaceted and profound. It serves as a test and a desire, measures pain with precision, is a stage towards heroism, and is a practical way to self-discovery, offering unique aesthetic experiences.

Other studies have examined the perceived values and experiential process of participating in participatory sporting events with a focus on the participants' perspective. Chang et al. (2017) explored the preparation strategies and experiences of completing one hundred marathons. They found that besides pursuing physical health, runners could attain a sense of self-achievement and self-realization in the process of achieving the goal of completing one hundred marathons. Runners often participated for leisure and interest, with the ultimate goal being to maintain good health and continue running. Chang et al. (2021) studied participants in the Taipei City Badminton Open Tournament and examined the predictive power of event service quality on attractiveness and perceived values. The study measured participants' perceived values across four dimensions, including social value, product value, supplementary value, and quality value. The results showed that event service quality and attractiveness significantly and positively influenced perceived values. Grohs et al. (2020) developed a framework for value co-creation at sporting events using strategic management and practice theory perspectives. They applied this framework to analyze the Big Mountain freeride world qualifier at Hochfügen, highlighting how sporting events can serve as platforms for resource provision, enabling participants (e.g., event organizers, city governments, sponsors, athletes, etc.) to collaboratively create various types of value experiences, including cultural, hedonic, social, status, and economic values.

In the context of student participation in sporting events, Liu and Chuang (2002) conducted a study that involved students from seven domestic universities. The study focused on the development of a scale to assess goal identification tendencies, factors influencing participation, and the level of involvement in the school sports days among university students. They found that students' goal identification tendencies primarily consisted of factors related to personal achievements, educational functions, and campus unity and interaction. Chen and Lin (2017) investigated the potential learning experiences of high school students participating in a school sports day. The

study found that participation in the sports day helped students showcase their skills, appreciate sports, undergo mindset shifts, build peer relationships, and develop social skills. Chen and Chien (2008) conducted in-depth interviews with students, teachers, and coaches who had participated in or organized the National Collegiate Game to construct the core values of the game. The results revealed that organizing the National Collegiate Game encompassed educational, competitive, promotional, and business-related purposes. The values of organizing were categorized into purposive values and instrumental values. Purposive values included bearing responsibility and mission, pursuing self-fulfillment, experiencing life, and seeking pleasure, while instrumental values included gaining competition experience, validating achievements and adjusting training methods, socializing and maintaining emotional connections, enhancing event or sports identity, and serving as a tool for exchanging benefits. MacLean and Hamm (2008) investigated and compared the values associated with sport participation among students from different competitive groups as well as across different age groups and gender. The results revealed 18 values (i.e., being fair, companionship, compassion, conformity, conscientiousness, contract maintenance, enjoyment, good game, health/fitness, obedience, personal achievement, public image, self-actualization, showing skill, sportsmanship, team cohesion, tolerance, and winning). Additionally, few differences were identified between participation groups, age groups, and gender. Chang (2020) used narrative analysis to explore the perceptions and event values of participants in the CRUSLBT. The study found that the tournament imbued participants with substantial values in terms of education, growth, heritage, fairness, social interaction, and promotion. Olympic education was also evident throughout the event, allowing participants to learn and appreciate unconsciously. Foster and Lally (2021) conducted interviews with 23 former NCAA Division I athletes from 16 countries and 8 sports to investigate how international student-athletes perceived their NCAA experience. The study revealed three primary themes, including thinking globally, developing and applying life skills, and prioritizing sport careers over non-sport careers.

Needs for the Study

Through the review of the aforementioned literature, it is evident that engagement in sporting events allows for the acquisition of diverse value perceptions. Prior studies have extensively discussed the purposes and meanings of organizing sports competitions. Additionally, research from the perspective of participants has shed light on the experiential values of engaging in mass sporting events, and valuable insights have been gleaned regarding the perceived values of sporting event participation among student populations. The researchers have been involved in the promotion of the CRUSL for several years. Through the involvement, the researchers have come to appreciate the importance of the perceived values of sporting events for participating athletes. This study was built upon the previous investigations regarding the values that students gained from participating in sporting events, and specifically delved into the CRUSLBT, the only intercollegiate basketball tournament in Taiwan with the home and away game feature. In particular, this study aimed to analyze athletes' perceptions of the values derived from their participation in the CRUSLBT using a quantitative approach. Subsequently, the Value-Attitude-Behavior (VAB) model proposed by Homer and Kahle (1988) was employed as the theoretical basis to assess the relationship between the perceived values of tournament participation and athletes' future participation intentions. The specific purposes of this study were as follows:

1. To develop the Perceived Values Scale for the Central Region University Sports League Event.
2. To examine the reliability and validity of the newly-developed perceived values scale.
3. To investigate potential differences in the perceived values of the CRUSLBT among participants with various demographic characteristics and participation behaviors, including year of school, previous participation in the tournament, number of seasons participated, starting player status, and average playing time.

4. To assess the predictive power of the perceived values of the tournament on participants' intentions for future participation.

Methods

Participants

The participants were athletes who registered for the general division of the 6th CRUSLBT in 2020. The general division of the tournament encompassed 9 universities, including National Taiwan University of Sport, Chaoyang University of Technology, Hungkuang University, National Chi Nan University, Providence University, National Taichung University of Science and Technology, Overseas Chinese University, Ling Tung University, and Dayeh University, with a total of 152 registered athletes. According to the competition regulations of the tournament, athletes in the general division are not admitted to their respective universities based on outstanding basketball performance. With the exception of National Taiwan University of Sport, all participating teams represent the general divisions of their respective universities. Among the 96 valid responses collected, 34.4% of the respondents (33 participants) were sophomores, followed by juniors (25 participants, 26%), seniors (including extended studies and graduate students) (22 participants, 22.9%), and freshmen (16 participants, 16.7%). Approximately one-third of the participants (34 participants, 35.4%) were starting players. Regarding average playing time, 28.1% played for less than one quarter (27 participants), followed by approximately one quarter (21 participants, 21.9%), approximately two quarters (20 participants, 20.8%), approximately three quarters (18 participants, 18.8%), and only 10.4% (10 participants) nearly played the entire game. Furthermore, the majority (66 participants, 68.8%) stated that they had previously participated in the tournament; among these, 33.3% (32 participants) had participated in one season, 28.1% (27 participants) had participated in two seasons, and 7.3% (7 participants) had participated in three seasons.

Instruments

This study employed the survey research methodology, and the primary research instrument was the "Perceived Values Scale for the Central Region University Sports League Event" developed by the researchers. This scale was designed based on the qualitative findings of Chang (2020) and conceptually comprised of six aspects, including education, growth, heritage, fairness, social interaction, and promotion, with a total of 24 items. Responses were recorded using the Likert scale ranging from "strongly disagree" (1 point) to "strongly agree" (5 points). Higher scores indicated higher levels of perceived value for participants. To ensure content validity, the scale was reviewed by three experts, including two professors of sport management and one professor of sport psychology. After multiple rounds of discussions, consensus was achieved, leading to the formulation of the draft scale. In addition to the perceived values scale, the survey encompassed demographic information (i.e., year of school), participation behaviors (i.e., previous participation in the tournament, number of seasons participated, starting player status, and average playing time), as well as items addressing future participation intentions. The objective was to comprehensively understand participants' demographic characteristics, participation behaviors, and their intentions for future involvement.

Procedure

The data collection for this study took place from December 21, 2020 (one month after the completion of the tournament) to January 15, 2021, using Google Forms. Initially, the researchers contacted the league's administration office and team captains to inquire if they were willing to assist in disseminating the survey. Once consent was obtained from the team captains, the survey link was sent to them via the Line communication app, utilizing a snowball sampling method. Team captains were then requested to forward the survey link to their team members. Notably, the messages sent to team captains included detailed instructions for completing the survey

and clearly explained the research's purpose and content. It also assured participants of the anonymity and confidentiality of their responses. Besides, there were no right or wrong answers and the results were solely for academic purposes. Two follow-up reminders were sent on the second week (December 28, 2020) and third week (January 6, 2021) after the initial dissemination to enhance the response rate. The survey link was closed four weeks later (January 15, 2021). After data screening, a total of 96 valid responses were obtained, resulting in an effective response rate of 63.16%. These responses were coded and used in the subsequent analysis.

Data Analysis

The statistical analysis techniques used in this study involved principal component analysis (PCA), Cronbach's alpha internal consistency analysis, *t*-test, one-way analysis of variance (ANOVA), and multiple regression analysis. PCA was performed to explore the factor structure for the newly-developed perceived values scale. Promax rotation, an orthogonal rotation technique, was utilized to improve the interpretability of the factor solution. Estimates of Cronbach's alpha were utilized to measure the internal consistency of the items comprising each extracted factor. In addition, this study used various demographic and participation behavior variables of the participants (including year of school, previous participation in the tournament, number of seasons participated, starting player status, and average playing time) as independent variables to conduct *t*-test and one-way analysis of variance (ANOVA) on the perceived value dimensions of the scale (dependent variables). If the ANOVA results revealed significance, Tukey's HSD post hoc test was applied to examine the sources of differences. Multiple regression analysis was performed to assess the predictive power of the perceived value dimensions (predictor variables) on participants' intentions for future participation (outcome variable). IBM SPSS for Windows 21 was employed for the above statistical analyses, with the significance level set at $\alpha = .05$.

Results

Scale Validity Analysis

PCA was performed to explore the factor structure for the perceived values scale. Prior to running PCA, we assessed the Kaiser-Meyer-Olkin (KMO) sampling adequacy and conducted Bartlett's test of sphericity to ensure that the sample data were appropriate for factor analysis. The analysis results indicated a high KMO sampling adequacy value of .87 and a significant result in Bartlett's test of sphericity (χ^2=2163.17, $p < .05$), indicating the suitability of the sample data for factor analysis.

PCA with promax rotation revealed the extraction of three factors (the first three factors had eigenvalues greater than 1) with a total of 81% variance explained. After examining the pattern matrix, all three factors had at least two items with salient loadings exceeding .50 and no substantial cross loadings (.32 or greater) (Hair et al., 2019). Based on the loaded items and the original factor blueprint, these three factors were named as developmental value (comprising the growth, social interaction, and fairness aspects in the factor blueprint), educational value, and transmission value (encompassing the heritage and promotion aspects in the factor blueprint). Item 8 (The ability to adjust mentality to focus on the game despite referee decisions), item 12 (The ability to swiftly adapt mindset in response to changes within the game), item 17 (Participation in the event can increase players' visibility and exposure), and item 24 (Through participating in the event, individuals can experience the tension and exhilaration inherent in competitions) were eliminated from the scale by reason of insufficient loading. Item 9 (Participation in the event serves as a means to refine skills and accumulate experience) and item 23 (Enhancing awareness of the event through promotional efforts) were deleted due to double loadings.

Table 1

Factor Solution for the Perceived Values Scale

Items	Developmental	Educational	Transmission
11. Participation in the event contributes to the enhancement of self-confidence.	.93		
10. The ability to identify deficiencies after the game serves to improve one's own capabilities.	.86		
16. Participation in the event facilitates the expansion of interpersonal relationships.	.83		
14. Participation in the event contributes to the advancement of both individual and team performance on the court.	.77		
07. Competing against teams of similar strength can yield a sense of achievement.	.72		
13. Participation in the event can facilitate team communication.	.67		
18. Participation in the event provides increased opportunities for interaction and exchange with players from other schools.	.62		
15. Participation in the event fosters mutual support among teammates.	.61		
02. Representing the school in the event is a form of honor.		.96	
03. Participation in the event can cultivate a sense of responsibility and self-discipline.		.93	
01. When the team achieves commendable results, it adds prestige to the school.		.76	
04. Participation in the event trains me to maintain faith and progress toward goals.		.73	
06. Participation in the event can foster a positive attitude in considering the value of both oneself and the team.		.70	
05. Cultivating the spirit of being a sportsman who remains humble in victory and resilient in defeat.		.58	
21. Participation in the event allows one to acquire experiences necessary for future integration into society.			.96
19. The networks established through participation in the event contribute to future career development.			.94
20. Participation in the event aids in the transmission of on-court experiences.			.75
22. Through event promotion, the lively atmosphere and educational significance of the game are disseminated.			.55
Eigenvalues	11.79	1.64	1.15
Variance explained	65.49%	9.13%	6.38%
Cumulative variance explained	65.49%	74.62%	81.00%

Note: Factor loadings lower than .50 were suppressed.

Table 2
Intercorrelations among the Emerged Factors

	Developmental	Educational	Transmission
Developmental	-	.72**	.58**
Educational		-	.60**
Transmission			-

Note: ** $p < .01$

Scale Reliability Analysis

Estimates of Cronbach's alpha were utilized to measure the internal consistency of the extracted factors. In accordance with the "coefficient alpha equal to or greater than .70" criterion (DeVellis, 1991), the internal consistency was excellent for all three extracted factors, having Cronbach's alpha estimates of .95 (developmental value), .95 (educational value), and .92 (transmission value). Notably, the inter-item correlations for each factor were all above .40, and deleting any item did not improve the Cronbach's alpha values. Following reliability and validity examinations, the scale consisted of three factors with a total of 18 items remaining.

Difference Testing

The results of *t*-tests revealed significant differences in perceived developmental value and transmission value based on previous participation in the tournament. Upon examining the means, participants with previous participation perceived higher developmental value and transmission value than rookie participants. Furthermore, whether a participant was a starting player demonstrated significant differences in developmental, educational, and transmission values, with starting players scoring higher in all three perceived value dimensions.

Table 3
Results of t-tests

IVs	DVs	Groups	*Mean*	*SD*	*t*	*p*
Previous participation	Developmental	Yes	4.06	0.47	2.76**	＜ .01
		No	3.74	0.63		
	Educational	Yes	4.03	0.56	1.72	.09
		No	3.81	0.69		
	Transmission	Yes	3.91	0.54	2.05*	.04
		No	3.63	0.76		
Starting player status	Developmental	Yes	4.22	0.45	3.58**	＜ .01
		No	3.82	0.55		
	Educational	Yes	4.15	0.54	2.26*	.03
		No	3.86	0.62		
	Transmission	Yes	4.07	0.55	2.97**	＜ .01
		No	3.69	0.63		

Note: * $p < .05$；** $p < .01$

The results of one-way ANOVA showed a significant difference in developmental value among different years of school. Tukey's HSD post hoc comparison further revealed that junior as well as senior and above participants perceived higher developmental value compared to freshman participants. Additionally, the number of seasons participated did not show significant differences in perceived developmental, educational, or transmission values. Similarly, different levels of average playing time did not yield significant differences in these three perceived value dimensions.

Table 4
Results of ANOVAs

IVs	DVs	Source	*SS*	*df*	*MS*	*F*	Post hoc
Year of school	Developmental	Between	2.77	3	0.92	3.31*	(3) > (1) (4) > (1)
		Within	25.64	92	0.28		
		Total	28.41	95			
	Educational	Between	2.71	3	0.90	2.57	
		Within	32.32	92	0.35		
		Total	35.03	95			
	Transmission	Between	2.52	3	0.84	2.20	
		Within	35.24	92	0.38		
		Total	37.76	95			
Number of seasons participated	Developmental	Between	0.36	2	0.18	0.79	
		Within	14.25	63	0.23		
		Total	14.61	65			
	Educational	Between	1.14	2	0.57	1.89	
		Within	18.99	63	0.30		
		Total	20.13	65			
	Transmission	Between	0.20	2	0.10	0.33	
		Within	18.99	63	0.30		
		Total	19.19	65			
Average playing time	Developmental	Between	2.06	4	0.52	1.78	
		Within	26.35	91	0.29		
		Total	28.41	95			
	Educational	Between	1.76	4	0.44	1.20	
		Within	33.27	91	0.37		
		Total	35.03	95			
	Transmission	Between	0.72	4	0.18	0.44	
		Within	37.05	91	0.41		
		Total	37.77	95			

Note: (1) freshman; (2) sophomore; (3) junior; (4) senior and above.
* $p < .05$

Multiple Regression Analysis

To assess the shared influence among predictor variables, the Variance Inflation Factors (VIFs) were calculated. All VIF values were below 5, with the highest being 3.38, indicating that multicollinearity was not a significant concern in the model (Cohen et al., 2014). The results of multiple regression analysis indicated that the re-

gression model constructed from developmental, educational, and transmission values significantly predicted future participation intentions [$F(3, 95)=15.11$, $p < .01$], and explained 33% of the variance in future participation intentions ($R^2=.33$), reaching a large effect size according to Cohen et al.'s standards. The regression coefficient examination further revealed that only developmental value was a significant predictor ($t=4.38$, $p < .01$) with a standardized coefficient of .65 (β=.65).

Table 5
Results of Multiple Regression Analysis

	SS	*df*	*MS*	*F*	*p*
Regression	9.46	3	3.15	15.11**	< .01
Residual	19.20	92	0.21		
Total	28.66	95			

Note: ** $p < .01$

Table 6
Results of Regression Coefficient Examination

	B	*SE*	β	*t*	*p*	VIF
(Constant)	1.98	0.35		5.62**	< .01	
Developmental	0.65	0.15	.65	4.38**	< .01	2.97
Educational	0.003	0.14	.004	0.02	.98	3.38
Transmission	-0.11	0.11	-.12	-0.98	.33	2.11

Note: ** $p < .01$

Discussion and Recommendations

Discussion

Whether it is a mega sporting event, a regional competition, or even a school sports day, the organization of various sporting events holds distinctive purposes and significance. Participants undergo a transformative experience during these events, internalizing the values associated with them. Different events have distinct purposes, leading to variations in the values perceived by participants. This study extended the research context of the values acquired by student populations participating in

intercollegiate sporting events. In particular, it employs a quantitative approach to analyze the value perceptions of athletes participating in the CRUSLBT, the only intercollegiate basketball tournament in Taiwan with the home and away game feature. Deriving from the qualitative research by Chang (2020), the researchers developed the Perceived Values Scale for the Central Region University Sports League Event. After creating the survey, it was administered to athletes from nine universities participating in the tournament. Through principal component analysis, three factors were extracted and named as developmental value, educational value, and transmission value, respectively. In addition, the results of Cronbach's Alpha internal consistency analysis indicated that all three extracted factors exhibited excellent internal consistency. These findings demonstrated that the perceived values scale developed in this study possessed sound psychometric properties.

The perceived values scale developed in this study was derived from the qualitative findings of Chang (2020). During the scale development phase, the factor blueprint consisted of six aspects (i.e., education, growth, heritage, fairness, social interaction, and promotion). Three factors were extracted through factor analysis. Among these factors, the developmental factor comprised the growth, social interaction, and fairness aspects. It encompassed the notion that "participation in the tournament contributes to the advancement of both individual and team performance on the court, fosters team communication and mutual support among teammates, enhances self-confidence as skills improve, and provides a sense of achievement." These contents align with existing research findings, emphasizing that participation in sporting events has been demonstrated to improve athletic skills and foster mutual understanding and care among participants (Hsu, 2005). Student participation in sports assists in building peer relationships and developing social skills (Chen & Lin, 2017). Engagement in sporting events enables individuals to cultivate experiences in interpersonal interaction (Liu & Chuang, 2002), while also providing opportunities to acquire valuable experience, develop skills, and access learning opportunities,

ultimately contributing to the enhancement of self-worth (Chen & Chien, 2008). Moreover, involvement in competitive events not only assists individuals in achieving their goals but also fosters a sense of self-achievement (Chang et al., 2017). Sporting events can also function as a platform for developing social networks, offering participants from various backgrounds opportunities to connect, recognize, and interact with one another (Chang et al., 2021), thereby creating reputational and societal value for the participants (Grohs et al., 2020). Notably, the athletic experience enables student-athletes to cultivate life skills useful during their college years and beyond, while also fostering the creation of a social network of contacts (Foster & Lally, 2021). The educational factor reflected the education aspect, entailing the idea that "besides pursuing rankings to honor the school, participants learn to cultivate self-discipline and responsibility, maintain a positive attitude toward themselves and the team, remain humble in victory and resilient in defeat, and uphold faith while striving toward their goals." These contents resonate with literature that emphasizes the educational and sportsmanship aspects of sporting events (Hsu, 2005) and the educational value in promoting physical health (Liu & Chuang, 2002), as well as the cultivation of sports ethics and morals (Chen & Chien, 2008). The transmission factor addressed the heritage and promotion aspects, involving "participation in the tournament facilitates the transmission of on-court experiences, the acquisition of relevant experiences for future integration into society, and the contribution to future career development through established networks. Additionally, publicity has the potential to enhance the lively atmosphere and educational significance of the tournament." The contents reflect relevant research findings, indicating that sporting events contribute to promoting sports activities and enhancing the sports culture (Hsu, 2005), while also serving the purposive value of transmitting mission and responsibility (Chen & Chien, 2008). In terms of career development, the student-athlete experience provides exceptional preparation for careers in the sport industry (Foster & Lally, 2021).

After developing the scale, this study examined the potential differences in perceived values among participants with different demographic characteristics and participation behaviors in the tournament. Moreover, it assessed the predictive power of perceived values on participants' intentions for future participation. The results indicated that higher-grade participants perceived higher developmental value from participating in the tournament. This aligns with the previous finding that older participants (26+) tend to rate the value of self-actualization (i.e., "I feel good when playing") higher than younger participants (14-17) in terms of sport participation (MacLean & Hamm, 2008). Additionally, those with previous participation exhibited greater awareness of the developmental and transmission values, while starting players demonstrated heightened perceptions of developmental, educational, and transmission values. Furthermore, enhancing athletes' perceived developmental value after participation is likely to contribute to improved future participation intentions. As articulated by Homer and Kahle (1988), the VAB model posited an intermediate phase of attitude between values and behavior. This could possibly explain the finding of the regression analysis, where only the developmental value demonstrated significant predictive power for participation intention. These findings are valuable for the league organizing committee in enhancing event management and for other sports organizations engaged in similar events.

Practical Recommendations

The experiences and value perceptions gained by athletes through their participation in the CRUSLBT are undeniably unique learning experiences that extend beyond the confines of university classrooms. To enhance the perceived values of this event, it is essential to incorporate Olympic education and sportsmanship into event planning in a more diverse and flexible manner. This approach can be drawn from Beesley and Chalip's (2011) Sports Event Leverage Model, which provides a framework for generating social benefits. The organizing committee may aim to create a wide

range of diverse themes, expand peripheral activities, and encourage informal social opportunities to cultivate a festive atmosphere. Additionally, organizers can foster social interaction by hosting events with social relevance and establishing informal social occasions (Wang et al., 2014). These outlined strategies and practices set the tournament apart from others, strategically creating a unique market image and niche. This should be the direction in which the organizing committee directs its future efforts.

Due to the unique nature of the tournament's competition formats (e.g., the home and away game system), participating universities are required to provide various resources in terms of campus administration. This includes services such as school bus transportation, venue preparation, event management, scoreboard personnel, and volunteers, all contributing to the successful co-organization of the tournament. These collaborative efforts enable athletes to learn and appreciate the significance inherent in participating in the event. They can thereby gain various values in terms of personal development, as well as educational inspiration and the transmission of experiences.

Recommendations for Future Research

Due to the specific nature of the research population, the sample size for this study was limited to 96 participants, indicating a need for improvement in scale development. Similar sample characteristics are observed in the other regional basketball leagues (e.g., TGB Basketball League, Ding Yu Basketball League). Future research should collect responses from different cohorts to increase sample size and thereby improve the quality of the analysis. Future research endeavors can further this line of research by recruiting athletes from other comparable intercollegiate sporting events, such as the University System of Taipei Tournament and the National Taiwan University System Tournament, to conduct confirmatory factor analysis and composite reliability analysis. This will help cross-validate the scale's psychometric

properties, thereby enhancing its theoretical implications and utility. Following the validation process, the scale can be applied to comprehensive sporting events, such as the National Collegiate Game, to investigate differences in perceived event values among athletes from various sports, disciplines, and performance levels. Additionally, after adapting the scale, it can be distributed to students working as staff and volunteers to gauge the level of value realization among non-athlete participants. Lastly, in the theoretical arguments of the VAB model, it was posited that values may influence behavior both directly and indirectly through attitude (Homer & Kahle, 1988). Future research could incorporate attitudinal variables (e.g., activities, interests, and opinions) into the research framework to examine the mediating effect of attitude in the context of sporting events. The results obtained from further investigations could be immensely beneficial in enhancing the overall significance of sporting events.

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參與中區大學運動聯盟賽會知覺價值探析

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摘要

目的：本研究擬編製「中區大學運動聯盟賽會價值量表」，檢驗不同人口背景與參賽行為之選手在參與聯盟賽事知覺價值上之差異，探析參與聯盟賽事知覺價值對於選手未來參賽意圖之預測力。方法：本研究以 2020 年中區大學運動聯盟籃球聯賽一般組之參賽選手為研究對象，研究工具包含作者自編之賽會價值量表、人口背景、參賽行為與未來參賽意圖題項，所得資料經主成份分析法、內部一致性分析、t 檢定、單因子變異數分析、多元迴歸分析。結果：研究結果顯示：（一）主成份分析法共萃取出三個因素，根據納入題項係將三個因素分別命名為發展性、教育性、傳遞性；內部一致性分析結果顯示，三個萃取因素均具有優異的內部一致性。（二）高年級選手知覺參與聯賽所獲得的發展性價值較高，過去曾經參賽者對於發展性與傳遞性價值的體悟較高，先發球員在發展性、教育性和傳遞性價值上均有較高的體悟。（三）由發展性、教育性、傳遞性價值所構成的迴歸模式對於未來參賽意圖具有顯著的預測力，其解釋變異量達 33%；其中發展性價值為顯著的預測變項。結論：研究者根據結果試提建議，以供聯盟籌辦單位未來優化賽務及其他體育運動團體籌辦相關賽事之參據。

關鍵詞：校際聯盟、主客場制、奧林匹克教育、運動家典範

優秀壘球選手參與棒球項目動機之研究

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摘要

目的：本研究目的主要在探討近幾年優秀女子壘球選手參與棒球項目之動機，並推廣女子棒球運動之參考。方法：採質性研究半結構式訪談法，研究對象以年齡 25 至 35 歲的 8 名女子壘球選手參與過女子棒球國際賽賽事之選手進行訪談。結果：在轉換階段的主要動機為「師長引薦」，其次為「喜歡、興趣」；進入到選手階段，參與的動機為「強化運動技能」、「享受運動樂趣」、「設定目標當國手」與「外在酬賞」；最後至國家代表隊階段，主要參與動機為「榮譽感」，其次為「自我超越」，再次為「成就感」。而影響參與動機的因素，在轉換階段因素為「團隊吸引」、「家人意見與支持」、「教練領導風格」、「訓練模式與環境」；在選手階段主要影響因素為「團隊吸引」，其次為「訓練模式與環境」，再次為「教練領導風格」；在國家代表隊階段主要因素為「家人意見與支持」，其次為「團隊吸引」，再次為「訓練模式與環境」。結論：本研究發現，師長引薦、強化運動技能及榮譽感是各階段推動臺灣女子壘球選手參與至女子棒球的核心動機，而團隊吸引力和家人支持是持續參與的關鍵因素。因選手渴望更高水平競賽和不同挑戰而轉換項目，特別是在女子棒球的國際賽事和職業發展的吸引力逐漸增加。期許未來能擴大研究範圍，探討不同背景選手的動機，以助於女子棒球的長遠發展，期許能透過本研究能促使更多人關注女子棒球運動，也為未來的研究提供了方向。

關鍵詞：女子壘球、女子棒球、參與動機

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壹、緒論

一、研究背景與動機

根據統計，1948 年倫敦奧運僅有 19 個女子運動項目，到了 2012 年倫敦奧運女性參賽的項目已高達 302 個項目，女性運動儼然是國際間重視的課題。就在國際體壇推動運動性別平等化的同時，國際間各單項協會也思考著如何透過運動促進性別平等，女子棒球運動逐漸被重視（黃崇儒、林榮輝、林啟川、邵于玲，2007），於是國際棒球總會 (International Baseball Federation , IBAF) 在 2004 年開始舉辦第一屆世界盃女子棒球錦標賽之後，也拉開了國際女子棒球運動的序幕。

棒球可以說是臺灣最具代表性的運動項目，也是少數能夠躍上國際舞台的團體運動之一。且近年來，由於女權主義的倡導，女性地位的提升，除了原本就為數眾多的男性選手之外，也有越來越多的女性參與棒球運動。自 2004 年於加拿大舉辦第一屆世界盃女子棒球錦標賽後，女子棒球也登上國際賽事殿堂，臺灣在 2006 年八月主辦第二屆世界盃女子棒球錦標賽，也吸引許多球迷前往觀戰。於是臺灣的女子棒球運動加速推展，即使場地、比賽場數及參加隊伍不多，每年也會舉行各項盃賽或邀請賽，提供選手驗收練習成果的機會（李傳財、張評傑、陳進財，2008）。女子棒球運動雖沒列入亞奧運的正式項目中，但臺灣女棒近幾年在 2018 世界盃及 2017、2019、2023 亞洲盃皆奪得亞軍，可看出中華女棒在國際賽成績依然相當亮眼。

在 2014 年成立「臺灣女子棒球運動推廣協會」，此為臺灣舉辦全國女棒的長期賽事，而在 2020 年首度舉辦臺灣女子棒球聯賽，是全國第一個專為女子棒球設立的長期假日聯賽，從最初 7 隊參與的草創，至今即將邁入 13 支女子棒球隊伍，到今年已舉辦第五屆，另外，也為了近一步深耕基層，本屆臺灣女棒聯賽也將首次設立 U12 少女組別，用最實質的比賽機會為基層女子棒球發展提供最有力的支持。我國更在 2018 年首度完成學生棒球「女子組」賽事的三級連線。體育署繼 107 學年度首度舉行國中女子組賽事後，108 學年度更是首度辦理高中及國小「女子組」賽事，完成學生棒球聯賽女子組三級賽事連貫，高中組共

有 3 所學校參賽，國小組則有 8 所學校出賽（教育部全球資訊網，2020）。而在 2024 年由中華民國學生棒球運動聯盟主辦的 112 學年度的三級棒球全國賽，今年高中青女棒增加至 9 隊，國中青少女棒也增加至 13 隊，國小女棒從首屆 108 學年度的 8 隊，到五年後的 20 隊增加許多，因此今年的臺灣女棒聯賽也將首次設立 U12 少女組別。

以前因受到男棒女壘的刻板印象，女子棒球在社會的關注度相對較低，但近年來我國在推動女子棒球運動，目前國內從事女子棒球選手大多都是女子壘球選手，實際上有一些女子壘球選手從小在進入到壘球運動前就是先接觸到棒球運動，但因為過去在國小畢業後，升學方面棒球還是以男生為主，女生只能以壘球方面來做發展，也因為兩種運動相似度高，使現今女子壘球選手成為棒壘雙棲選手。

目前國內參與女子棒球可分為兩個形式：一、由女壘校隊組成，現今大專與高中女壘隊紛紛在重大棒球賽事中，臨時改練棒球來參與女子棒球賽事，等到賽事結束後，又改回繼續練習壘球，而最有名的是臺北市士林高商從 2014 年起開始參加黑豹旗全國高中棒球大賽，使得讓大家更注意到女子棒球，藉由黑豹旗凸顯女生也是可以打棒球的，二、我國社會女子棒球隊目前有 13 隊，它是由社會上熱愛棒球運動的人士，共同組成的球隊，以假日來訓練及比賽，在這 13 隊裡面有許多女壘退役球員參與，繼續延長球員生涯。這些選手在每個階段相對於其他同年紀的人，她們必須在學業、工作及訓練中找到一個平衡點，而在經歷這漫長難熬的訓練或是經歷無數的低潮挫敗中，她們參與的動機是什麼呢？（施婉婷，2014）。

運動動機關係著個體的運動行為，包括個體為何選擇參與某項運動、其努力的程度、持續時間、甚至於退出運動，動機都扮演了關鍵的角色 (Chi, 1993)。而運動動機可分為內在動機與外在動機，Deci and Ryan (1985) 提出的「認知評價理論」，認為內在動機是指個體參與和動的目的是為了有趣、好玩，且能滿足其內心的需求；外在動機則是指個體參與活動的目的是為了獲得外在的賞酬；兩者間互相作用進而影響運動員的成績表現；但 Stipek (1993) 認為內在動機是維持運動員持續從事運動的主要動力。

故研究者本身為壘球選手，在近幾年看到身邊學姐、同學與學妹紛紛參與女子棒球這項運動，也看到女子棒球在國際的成績也越來越好，為了瞭解女子壘球選手參與女子棒球的動機為何？並分析選手的動機，本研究將有助於制定更加有效的推廣策略，提升女子棒球在臺灣乃至國際舞台上的競爭力，從而促進運動性別平等的實現。

二、研究目的

根據上述研究目的，本研究欲探討的研究目的如下：

（一）優秀女子壘球選手參與女子棒球的動機因素為何？

（二）優秀女子棒球選手時期參與動機因素為何？

（三）優秀女子棒球國手時期參與動機因素為何？

三、名詞操作性定義

（一）女子壘球選手：指在大學有打過女子壘球的選手，這些選手大學分別來自於國立臺灣師範大學、臺北市立大學以及國立暨南大學的選手。

（二）女子棒球國手：指曾旅日過與代表我國參加過世界盃或亞洲盃之女子棒球國家代表隊選手。

貳、研究方法

一、研究對象

本研究對象以年齡 25 至 35 歲的 8 名女子壘球選手並參與女子棒球國際賽賽事之選手作為研究對象並進行一對一訪談，受訪者的招募方式以女子棒球選手取 4 名旅日及 4 名 2023 亞洲盃之選手，連絡訪談對象並說明動機及目的，徵求受訪者同意受訪並確定受訪時間。

表 1

研究受訪者基本資料

編碼	年齡（歲）	球齡（年）	專項守備位置	最高運動成就
01	25	壘球：15 年 棒球：8 年 旅日：1 年	投手	2019 亞洲盃 亞軍
02	33	壘球：10 年 棒球：18 年 旅日：4 年	投手、外野	2018 世界盃 亞軍
03	31	壘球：16 年 棒球：11 年 旅日：4 年	外野	2018 世界盃 亞軍
04	29	壘球：13 年 棒球：10 年 旅日：1 年	內野	2018 世界盃 亞軍
05	35	壘球：10 年 棒球：15 年	外野	2023 亞洲盃 亞軍
06	32	壘球：11 年 棒球：10 年	內野	2023 亞洲盃 亞軍
07	26	壘球：15 年 棒球：5 年	投手	2023 亞洲盃 亞軍
08	31	壘球：18 年 棒球：13 年	內野	2023 亞洲盃 亞軍

二、研究工具

本研究工具如下：研究受訪者基本資料（如表 1）、訪談大綱（如表 2）、紙、筆、錄音設備等工具，以利詳實記錄訪談過程及進行進一步分析。

（一）研究者本身

在質性研究中，研究者本身扮演著一種研究工具的角色；研究者之前接受過相關質性研究法的課程培訓，具備進行質性研究訪談所需的技能和知識。在進行該研究時，研究者將以一個開放的態度，並運用自身在研究主題方面的專業知識進行研究。

（二）訪談大綱

研究者根據過去文獻內容制定了本研究的訪談大綱，並經三位專家學者的審核，以確保訪談大綱的內容是有效的。在經過專家學者的審核後，研究者根據訪談大綱的內容進行實際的訪談。

表 2
訪談大綱

題次	訪談題目
1	請您回想當初加入女子棒球的動機為何？（興趣、師長引薦、家人、同學）
2	您認為在此階段影響您參與的因素是什麼？（家人意見與支持、教練領導風格、團隊吸引、訓練模式與環境…等因素）
3	女子棒球選手階段，您的參與動機為何？（強化運動技能、設定目標當手、享受運動樂趣、外在酬賞）
4	您認為在此階段影響您參與的因素是什麼？（家人意見與支持、教練領導風格、團隊吸引、訓練模式與環境…等因素）
5	成為亞洲盃、世界盃國手後，您的參與動機為何？（榮譽感、成就感、自我超越）
6	您認為在此階段影響您參與的因素是什麼？（家人意見與期望、教練領導風格、團隊吸引、訓練模式與環境…等因素）

（三）錄音設備

在獲得受訪者的知情同意之後，訪談開始前，將使用錄音設備對整個訪談過程進行錄音。當訪談結束後，研究者將錄音設備中收集的內容轉錄成逐字稿，以便進行整理和分析。

三、資料整理與分析

（一）訪談內容整理

將訪談時所作的筆記及錄音的內容經彙整後，並建立訪談的書面記錄，將資料與內容以重點式逐條敘述，之後在進行歸納、分類、分析等過程，成為有意義且可用的資料，若發現缺失、錯誤或對內容有所疑問，再以電話的方式連絡受試者或親自走訪釐清問題內容，以增加資料的可信度及完整性。

（二）受訪者資料編碼

本研究為了保護受訪者資料，分別以代號進行編碼，編碼的規則之 01 代表第一位受訪者，02 代表第二位受訪者，以此類推。

（三）信實度

本研究採半結構式訪談大綱，將選手們在其運動生涯中，從一開始的轉換階段到選手階段再到國手階段的參與動機與影響因素，

進行分析與整理，再將選手們在訪談過程中出現與參與動機相關且有意義的陳述，將不同型態的參與動機加以歸納。為提高訪談信實度，將依據紮根理論 (grounded theory)，運用歸納方式對現象加以分析整理，以由下而上的方式，發掘反映社會現象；依據研究中訪談逐字稿中圈選出「事件」，經分析與歸納出「概念」，再由一群相似的概念為其命名，即所謂的「範疇」（吳芝儀、廖梅花譯，2001）。另為了研究的嚴謹度，本研究採用質性研究中的「分析者三角檢定法」，除研究者本身以外，會請兩位相關領域專家學者進行內容審視與評估，以求得分類上的信度，並且透過詳實的記載，盡可能的讓觀察的內容真實呈現，以達到研究上的外在效度（胡幼慧、姚美華，1996）。

參、結果

一、轉換階段（從女子壘球隊加入至女子棒球隊階段）

（一）轉換階段的參與動機主要是「師長引薦」，其次是「喜歡與興趣」。

1. 師長引薦

因師長與教練在選手的發展中扮演著至關重要的角色，他們不僅僅是教授技能的人，還是指導者和啟發者，可以通過他們的觀察和指導，會發現選手在其他運動項目中的潛力，這可能有助於發現更多潛在的運動才能，同時豐富了選手的經驗和技能，所以教練在選手轉換中的角色、不同運動項目之間的相似性以及如何提供更多的轉換機會提供了重要的啟示。

一開始是「師長」推薦，「老師」希望我丟球能下盤運用多一點，所以讓我去練棒球投手，讓我從中體會下盤的運用。(受訪者 01)

「教練」有問我說要不要去打棒球試試看，我打得第一次就選上了世界盃的國手，之後有跟「教練」討論過要往棒球還是壘球發展，但是最後

還是選擇棒球。(受訪者 03)

國中的「老師」有女子棒球的觀念，讓我們組女子棒球隊去參加男生的比賽，2016 那一年是我第一次代表中華隊去比賽，也是從那一次開始讓我對於棒球這塊產生的很大興趣跟樂趣。(受訪者 04)

「老師」想說女壘選手能不能跨領域去到棒球那塊，選我們能力好的去參加我們就去參加，也是那時候開始轉型。(受訪者 05)

在棒壘球項目中，左投只有投手的位置最佔優勢，與「大學教練」討論後，決定往棒球的方向發展。(受訪者 07)

「教練」問我們畢業生要不要參加女棒，那一次選上國手，到了大學後也持續在推廣棒球。(受訪者 08)

2. 喜歡、興趣

喜歡和興趣也是個人的內在動機也是推動受訪者參與運動的重要因素之一，進一步強調了個人興趣在運動參與中的重要性，個人興趣來自於對運動的熱愛、對技術和策略的好奇心和對團體合作和競爭的渴望，因而開啟了女子棒球之路。

我「喜歡」棒球也「喜歡」在投手上的感覺，在棒球的投手上面可以動腦的東西比較多，也覺得比較「好玩」。(受訪者 02)

打棒球比較「好玩」，在棒球的投手球種比較多，會讓自己比較想去學不一樣的變化球，也會跟打者比較有挑戰性。(受訪者 06)

（二）轉換階段參與動機之因素為「團隊吸引」、「家人意見與支持」、「教練領導風格」與「訓練模式與環境」。

1. 團隊吸引

受訪者都以快樂打球、享受比賽和喜歡團隊一起打球的感覺，而團隊也比較像家人的相處模式，所以一個良好的團隊氛圍和團隊合作精神可以吸引人參與女子棒球這項運動。

隊友基本上都很熟悉，也很「了解彼此和對方」，所以這個團隊讓我很喜歡。(受訪者 02)

打棒球比較可以「享受過程」，畢竟棒球也是從以前喜歡到現在的運動項目。(受訪者 03)

2. 家人意見與支持

因在這階段許多受訪者多半是社會人士，所以家人的支持對受訪者的動機也是至關重要的，家人的鼓勵和支持可以幫助受訪者克服困難，並維持對女子棒球的參與。

畢竟現在還是要以工作為主，所以有「家人的支持」才能讓我們一直享受在這個運動上。(受訪者 04)

在現階段真的確實是「家人的支持」才能讓我想做我自己想做的事情。(受訪者 07)

3. 教練領導風格

有效能的教練領導不僅可以促進選手的學習動機，提升選手的運動表現，而教練的專業性、積極性和關心球員的態度都可能對球員的動機因素產生影響。

教練以前是打棒球的，所以教練會比較嚴格，但從「教練身上學到的技術也會比較多」。(受訪者 06)

教練的影響階段比較大，他會用他「自己的方式來帶我們」，讓我覺得那兩三屆「成長」了很多，也算是讓我們奠定的基礎。(受訪者 08)

4. 訓練模式與環境

受訪者覺得打棒球與打壘球的比賽與練習節奏的不同，而打壘

球比較有壓力和緊繃感，在訓練的模式上夠自由的調整訓練時間，是讓受訪者好配合且喜歡的訓練模式。

打壘球的氛圍和比賽成績比較有壓力，「打棒球自己比較能掌握節奏」。(受訪者 01)

在棒球並不會因為腳慢、臂力不好或是打得不好，而我只要確實把擊球點打好，把球打得到外野就能上壘，所以我覺得棒球「訓練模式」上還是跟壘球有很大的落差。(受訪者 05)

二、選手階段

（一）選手階段的參與動機為「強化運動技能」、「享受運動樂趣」、「設定目標當國手」與「外在酬賞」。

1. 強化運動技能

因希望提高自己的棒球技能，雖然棒壘球是相似運動，但還是有許多觀念和小細節不同，而她們透過假日訓練，以期在比賽中表現出色，並不斷學習和強化自己的運動技能。

利用自己來日本打球所學到的技術分享給隊友，這樣在日後國際賽也能跟日本隊有所競爭。(受訪者 02)

因為自己有目標，就會有一個動力去「加強自己的技術」，想要挑戰外面的世界。 (受訪者 08)

2. 享受運動樂趣

受訪者主要在此階段對打擊、投球、跑壘等運動活動感到樂趣，她們喜歡與隊友一起訓練和比賽的過程，並對棒球帶來的挑戰和樂趣感到滿足。

我就喜歡打棒球，所以我就把工作辭了來到日本打球，但也是單純「喜歡打棒球」。(受訪者 03)

今年對於女子棒球這個運動對我來說，工作以外可以盡全力去「享受打棒球這個熱忱」。(受訪者 04)

3. 設定目標當國手

受訪者希望自己能成為國家隊的一員，代表自己的國家參加國際比賽，並努力提高技術水平和在比賽中的表現來實現這一個目標。

在壘球比較難當到國手，所以來打棒球就想拚一次國手，給自己設定「目標當選國手」。(受訪者 01)

之前在壘球沒當選過國手，所以希望自己能完成在壘球無法完成的「國手夢」。(受訪者 07)

4. 外在酬賞

受訪者被外在酬賞所吸引，因在選手階段的大多數選手都是社會人士，所以在球隊的營養金的贊助下，會使選手更無後顧之憂的去練球。

因為有「營養金」才能享受運動的樂趣，就不用煩惱住宿費、車馬費和球團那邊能不能給你優質的訓練環境。 (受訪者 05)

現在自己都出來社會工作，但隊上都會給一份「營養金」，也會比較想去練球。(受訪者 06)

（二）選手階段的參與動機之因素為「團隊吸引」，其次為「訓練模式與環境」，再次為「教練領導風格」。

1. 團隊吸引

因享受與隊友一起打球的氛圍，而學姊們帶來的經驗和技術，

營造了一個有利於學習和成長的環境，讓學姊與學妹之間增加了友情和支持，使團隊氛圍與關係變得更緊密。

我覺得大家比較自在，大家都是為了「想打球而打球」，所以參與女子棒球的練習感覺就很不一樣。(受訪者 01)

「打棒球比較快樂」，我們平常學姊學妹分工非常明確，這也算是我們在球隊找到一個共存的方法。(受訪者 05)

整個團隊幾乎都是從以前到大學一起征戰過的隊友，所以「團隊氣氛也都會比較好」。(受訪者 06)

「身邊朋友的幫助」，讓我對棒球更想努力去做到最好。(受訪者 07)

「隊友都是很熟悉的人」，現在大家都會一起打打鬧鬧，氣氛很重要。(受訪者 08)

2. 訓練模式與環境

受訪者提到在自己所屬的球隊中，提供良好的訓練環境、場地和設備，會使得訓練更加順利和有效，同時減少了受傷的風險，讓選手能夠專心訓練。

我參與到球隊在國內的環境是算不錯的，像我們「練習的環境就是有一個專門的棒球場」。(受訪者 02)

在臺灣我們是他旗下球隊，他會給我們很好的「訓練環境」，所以才有這個機會去到這個球場來做訓練。(受訪者 03)

3. 教練領導風格

教練利用「民主」的方式，讓選手提出意見和想法，這增強了選手的參與感和責任感，也會讓教練與選手的連結和信任感更強。

教練接觸到「棒球專業」的東西會比我們還多，會讓我們覺得他是一

個「很重要的教練」，而教練的領導風格也是「民主化」，我們如果有任何想法或意見都可以提出來。(受訪者 04)

三、國手階段

（一）國手階段的參與動機為「榮譽感」，其次為「自我超越」，再次為「成就感」。

1. 榮譽感

受訪者穿上中華隊的球衣和代表國家出戰充滿了榮耀感和榮譽感，不僅是對自己的肯定，也是對家人和團隊的驕傲。

想披上國家的戰袍「為國爭光」，自己當上國手的話也會讓家人很有「榮耀」。(受訪者 01)

想要「穿著這一件中華台北的球衣到國外去比賽」，讓臺灣的人更認識到這項運動。(受訪者 03)

選到國手一定是「榮譽感」，覺得自己被證明了，自己能在這項運動闖出一片天。(受訪者 07)

入選中華隊是一件很「光榮」的事，希望能夠為「臺灣爭光」。(受訪者 08)

2. 自我超越

受訪者具有強烈的自我超越意識和渴望不斷進步的精神，即使在面對強大的對手時，仍然保持著勇氣和決心，積極挑戰自己，追求更高的成就。

打了 10 年，希望能夠「挑戰自己，追求更高的層次感」。(受訪者 02)

在每一次國際賽發現許多國家一直在進步，我想超越她們「挑戰自己

的極限」。(受訪者 05)

在每一次比賽想要「挑戰和自我超越」，能在運動生涯中拿到一座個人獎項，我才會覺得是完美且沒有遺憾的。(受訪者 06)

3. 成就感

受訪者透過生涯中的成長和表現來獲得滿足感和自信，並對於自己的進步和成就感到驕傲，也願意為了更高的目標和更好的表現而不斷努力。

我在比賽中打出了適時的一棒，自己很有「成就感」 (受訪者 04)

（二）國手階段的參與動機為「家人意見與期望」，其次為「團隊吸引」，再次為「訓練模式與環境」。

1. 家人意見與期望

家人給予受訪者夢想的肯定和支持，不僅在精神上給予鼓勵，也在實際行動上給予支持，例如：在比賽現場觀看比賽、提供想法、意見和回國接機等，這些都是運動員在困難時期的後盾和支持，所以家人的理解和支持能讓選手更有信心地追尋自己的夢想。

我還有打球夢，如果我的家人不支持我打球，我就無法好好的完成我的夢想，我很慶幸我的「家人願意支持」我一邊打球一邊打工。(受訪者 02)

有「家人的支持」，所以才讓我繼續打棒球，甚至到我現在的旅日，我都很感謝他們。(受訪者 03)

家人也會希望我們要先有穩定的工作，但還好有「家人的支持和尊重」，才能讓我能夠持續到今年繼續打棒球。(受訪者 04)

「家人也很鼓勵我繼續打球」，希望我能再進國家隊，然後繼續打到世界盃的總決賽。 (受訪者 06)

「家人從我打球開始就很支持我從事這個運動」，讓我覺得家人是我的後盾，自己會走這條路的辛苦是沒有白費的。(受訪者 07)

2. 團隊吸引

受訪者在集訓過程中逐漸融洽，團隊成員之間的互相幫助、支持和共同成長，即使存在年齡和經驗上的差異，學姊們仍願意分享經驗、鼓勵和照顧比較年輕的學妹，從而使整個團隊更加凝聚，進一步強化了團隊的凝聚力和向心力。

在這個團隊的氛圍上會覺得「大家都是很努力、很認真地為了想贏球和在國際上有好的表現」，也是為了追求同一個目標前進。(受訪者 01)

在一開始有好幾個學妹是從壘球轉到棒球，但她們在棒球的環境一開始會有點挫敗感，但經過「學姊的經驗傳授」會讓學妹更快跟上我們的腳步。(受訪者 05)

3. 訓練模式與環境

對選手的發展也起到關鍵作用，國手階段的集訓提供了良好的訓練機會和環境，使選手能夠在專業的指導下持續提升自己的技術水平。此外，提供完善的訓練設備和場地也能夠讓運動員更好地進行訓練和比賽準備，從而取得更好的成績。

在當國手時，我們集訓的「訓練的環境」比較好，就是像當國手那樣的待遇，訓練也是很密集的訓練。(受訪者 08)

表 3

各階段參與動機之因素整理表

轉換階段參與動機		
訪談題綱	受訪者編號	回答次數
1. 師長引薦	01.03.04.05.07.08	6 次
2. 喜歡與興趣	02.06	2 次
轉換階段參與動機之因素		
訪談題綱	受訪者編號	回答次數
1. 團隊吸引	02.03	2 次
2. 家人意見與支持	04.07	2 次
3. 教練領導風格	06.08	2 次
4. 訓練模式與環境	01.05	2 次
選手階段參與動機		
訪談題綱	受訪者編號	回答次數
1. 強化運動技能	02.08	2 次
2. 享受運動樂趣	03.04	2 次
3. 設定目標當國手	01.07	2 次
4. 外在酬賞	05.06	2 次
選手階段參與動機之因素		
訪談題綱	受訪者編號	回答次數
1. 團隊吸引	01.05.06.07.08	5 次
2. 訓練模式與環境	02.03	2 次
3. 教練領導風格	04	1 次
國手階段參與動機		
訪談題綱	受訪者編號	回答次數
1. 榮譽感	01.03.07.08	4 次
2. 自我超越	02.05.06	3 次
3. 成就感	04	1 次
國手階段參與動機之因素		
訪談題綱	受訪者編號	回答次數
1. 家人意見與支持	02.03.04.06.07	5 次
2. 團隊吸引	01.05	2 次
3. 訓練模式與環境	08	1 次

肆、討論

一、討論

本節針對主要的各階段動機與因素所獲得的結果進行討論。本研究在各階段參與動機方面的主要研究結果：1. 師長引薦；2. 強化運動技能；3. 榮譽感；在參與動機因素方面以這兩項進行討論：1. 團隊吸引；2. 家人意見與期望。

（一）各階段參與動機

1. 師長引薦

因受訪者都是先從壘球後才開始接觸棒球，而剛開始接觸女子棒球的機緣大多數受訪者主要是受到「師長引薦」，此研究發現與郭子元 (2000) 探討我國優秀女子田徑運動員參與田徑運動動機有相似之處，都是有教練發掘來引發選手最初的轉換動機與想法。因教練是運動員生活中非常重要的人，他們所扮演的角色是運動員運動經歷的關鍵 （Williams, Kenow, Jerome, Rogers, Sartain & Darland, 2003 ; Kavussanu, Boardley, Jutkiewicz, Vincent & Ring, 2008）。在本研究的受訪者因女子壘球競爭激烈，大部分的女子壘球選手在壘球比賽中較無機會表現，經由國內的棒球選拔賽可以當選國家隊選手，在技術遷移無大困難之狀態下，吸引了許多女子壘球選手及熱愛棒球運動的女性球員參與，因此師長發掘和觀察，並啟發與引導受訪者往有利且相似的運動項目中轉換跑道，進而延長受訪者的運動生涯與提升比賽中的自信心。

2. 強化運動技能

因在棒球運動中，守備的部分，因場地與傳球距離的增加，考驗著女子選手的臂力與準度，容易造成上肢傷害之機會，對女子選手來說都是不小的負擔，這一部分卻時常被選手忽略。攻擊的部份，棒球與壘球兩者之揮棒軌跡不同，棒球著重於拉打，而壘球則以砍擊式為主，由於投捕距離變長，打者的準備及跟球動作以及打擊之

重心轉換也必須跟著調整，擊球點的掌握更加不易。所以受訪者希望提高與強化自己的棒球技能，並在未來希望成為國家隊的一員，代表自己的國家參加國際比賽，以期在比賽中表現出色。張富鈞、張耿介、吳兆欣（2000）對大仁技術學院學參與射箭運動動機，其研究結果顯示：學生在參與射箭動機方面以「運動技能」的動機為主要因素，此研究結果與本研究相符。技術需求意旨選手為了提升自我競技水準與達到運動最高成就而產生的動機，因此受訪者想繼續在選手階段強化自身的運動技能和學習專業的知識。

3. 榮譽感

因受訪者對穿上中華隊的球衣和代表國家出戰充滿了榮耀感和榮譽感，此研究發現與施婉婷（2014）的臺灣女子壘球國手競技生涯中不同重要階段時期參與動機有相似之處，因受訪者能夠代表國家參加國際比賽，且參與的機會難能可貴，也是一件很光榮的事，並證明自己的了自己的實力，希望能夠披著國家戰袍為國爭光。

（二）各階段參與動機之因素

1. 團隊吸引

本研究受訪者在團隊吸引的因素最多，施婉婷 (2014) 透過訪談調查，在壘球國手的大專階段以「團隊吸引」為影響參與動機的主要因素。因對於受訪者來說，在技術和心理層面都是屬於逐漸成熟的狀態，而受訪者大部分由大學一起征戰的隊友組成，這種緊密的關係和團隊氛圍讓選手感到快樂並享受參與，因為在團隊中共同成長、取得好成績的過程中，彼此之間的支持和鼓勵是非常重要的。

2 家人意見與期望

因受訪者大多數都是社會人士，在夢想與經濟因素下，依舊選擇了自身所熱愛的棒球動，但這背後要感謝家人給予受訪者夢想的肯定和支持，不僅在精神上給予鼓勵，也在實際行動上給予支持，但最終透過選手的努力與實力證明，而轉為支持的方式鼓勵著受訪者繼續參與棒球運動，施雅薇 (2004) 提到參與運動時常會因為有著

他人鼓勵與支持，而 更有能力去面對困難、挑戰與壓力，使其運動行為得以持續。因受訪者的家人所給予精神或經濟上的支持，使其受訪者在遇到挫折後仍有最後一絲動力為了家人們繼續堅持努力下去。

二、結論與建議

本研究採用分析者三角檢定法以提高信度。三位研究者分別對半結構式訪談資料進行編碼與分析，並在分析過程中進行交叉比對與討論，以確保資料詮釋的一致性和準確性。通過多位研究者的共同參與，能夠減少個人偏見，並從不同視角對資料進行分析，最終達成一致的結論。本研究之信度結果表明，三位分析者在主要主題與次要主題的編碼一致性高，達到較高的信度水準，證實資料詮釋的穩定性與可信性。

研究發現，師長引薦、強化運動技能及榮譽感是各階段推動臺灣女子壘球選手參與至女子棒球的核心動機，而團隊吸引力和家人支持是持續參與的關鍵因素。因選手在選擇轉換運動項目時的多重考量，包括：機會、興趣、挑戰、專業發展和社交環境等因素，選手在做出轉換時，通常是出於對更高水平競賽的渴望，或是尋求不同的運動挑戰與環境。然而，隨著女子棒球在臺灣的發展逐漸成熟，並為壘球選手提供了另一條發展途徑，特別是在國際賽事和職業化方面的吸引力逐漸增加。因此，本研究僅針對參與過旅日及國際賽的選手進行分析，並未研究沒參與國際賽事的女子棒球選手的動機進行探討。未來研究應考慮擴大樣本範圍，納入更多尚未參加國際賽事的選手，或不同發展階段的選手，以全面了解各背景下的動機差異，以全面了解女子棒球選手的動機和發展需求。另外，本研究提供了對優秀臺灣女子壘球選手轉換至女子棒球的一個重要視角，並強調了在當前運動環境下，不同運動間的選手流動現象及其背後的動機。這些發現對於女子棒球的推廣和發展策略具有參考價值，期許能透過本研究能促使更多人關注女子棒球運動，也為未來的研究提供了方向。

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A Study of the Motivation of Excellent Female Softball Players to Participate in Baseball

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Abstract

Objective: This study aims to explore the motivations behind elite Taiwanese female softball players transitioning to baseball in recent years and to provide insights for promoting women's baseball. Method: A qualitative research method was employed, using semi-structured interviews with eight female softball players aged 25 to 35, all of whom have participated in international women's baseball competitions. Results: The main motivation during the transition phase was "mentor recommendations," followed by "personal interest and passion." As the athletes advanced to the player stage, their motivations included "skill enhancement," "enjoyment of the sport," "aiming to join the national team," and "external rewards." At the national team level, the primary motivation was "honor," followed by "self-improvement" and "a sense of achievement." Influencing factors during the transition phase included "team appeal," "family opinions and support," "coaching leadership," and "training environment." During the player stage, the main factors were "team appeal," followed by "training environment" and "coaching leadership." At the national team stage, the key factors were "family support," "team appeal," and "training environment." Conclusion: This study revealed that mentor recommendations, skill enhancement, and a sense of honor are the primary motivations driving Taiwanese female softball players to transition to women's baseball at various stages. Team appeal and family support were identified as key factors for sustaining participation. Players often switch to women's baseball in search of higher-level competition and new challenges, particularly as the sport's international events and professional opportunities continue to expand. Future research should broaden the scope to explore the motivations of athletes from diverse backgrounds, aiding the long-term development of women's baseball. Additionally, this study aims to raise greater awareness of women's baseball and provide direction for future research.

Keywords: Women's Softball, Women's Baseball, Participation Motivation

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