

Commonalities in Pathways that Strengthen Athlete Development

Taisuke Kinugasa, PhD

Senior Pathway Scientist, Department of High Performance Strategy

/ Senior Physiologist, Japan Institute of Sports Sciences

Japan High Performance Sport Center (HPSC)

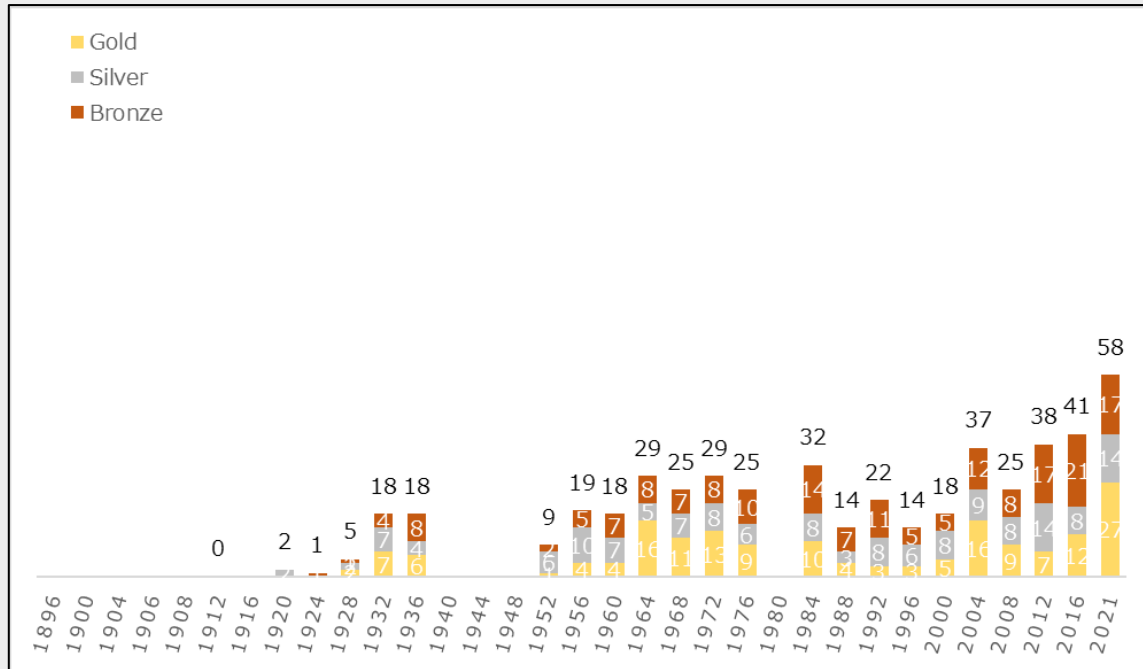
Japan Sport Council (JSC)

JAPAN SPORT
COUNCIL

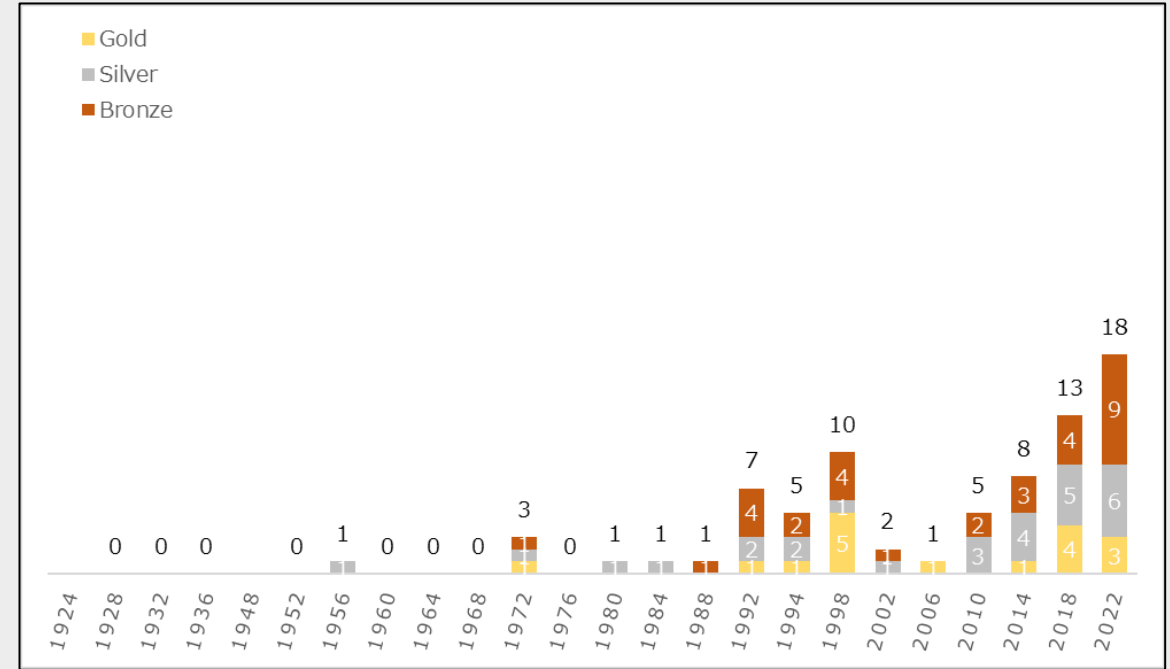
HP JAPAN HIGH
PERFORMANCE
SC SPORT CENTER

Measuring “Success” as Medal Counts in Japan

Summer Olympics



Winter Olympics



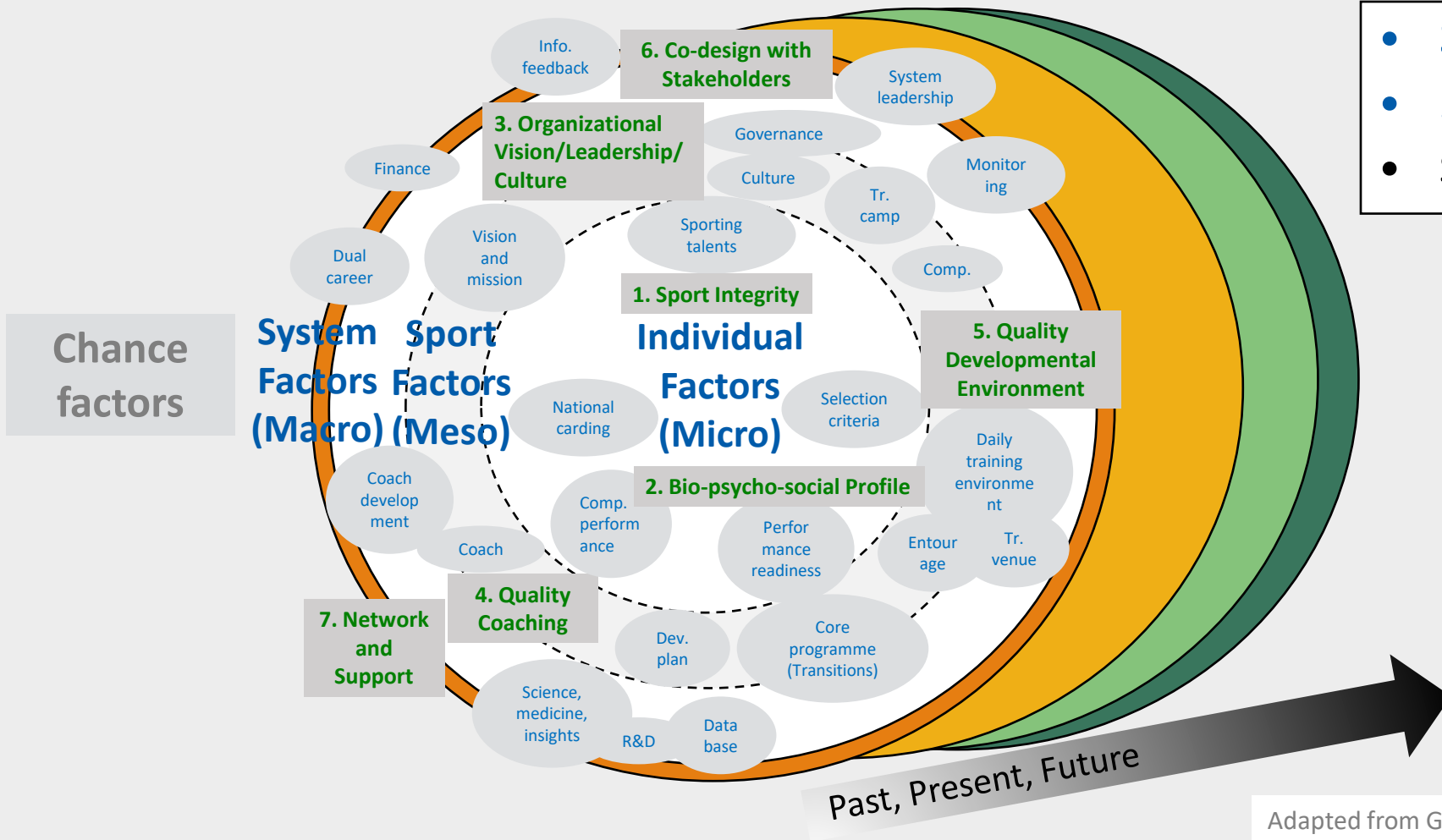
How to Repeat Successes at High Performance Sport?

Athlete Development Pathways

are a planned sequence of experiences to optimise the phases of athlete development from the foundations of movement to sport mastery (Kinugasa et al, 2019).

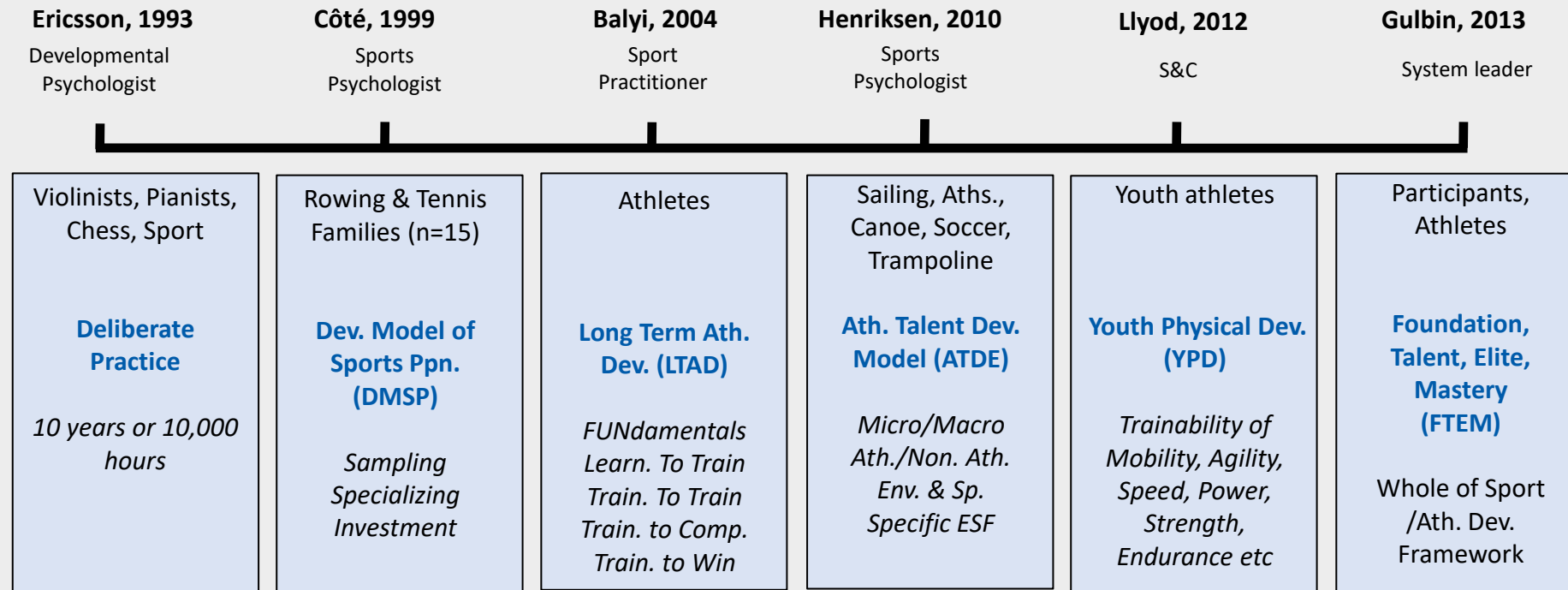


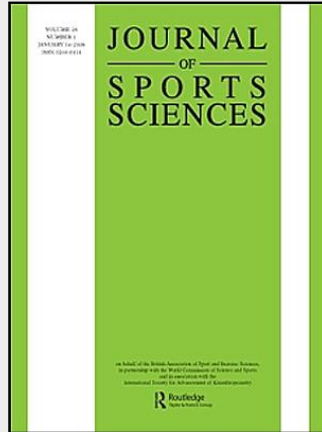
- 3 main factors
- 25 elements → 7 main axes
- Systematic change



Adapted from Gulbin and Weissensteiner (2013), Henriksen (2010), and Kinugasa et al. (2019)

Which Pathway to Go?





Journal of Sports Sciences, 2013
Vol. 31, No. 12, 1319–1331, <http://dx.doi.org/10.1080/02640414.2013.781661>

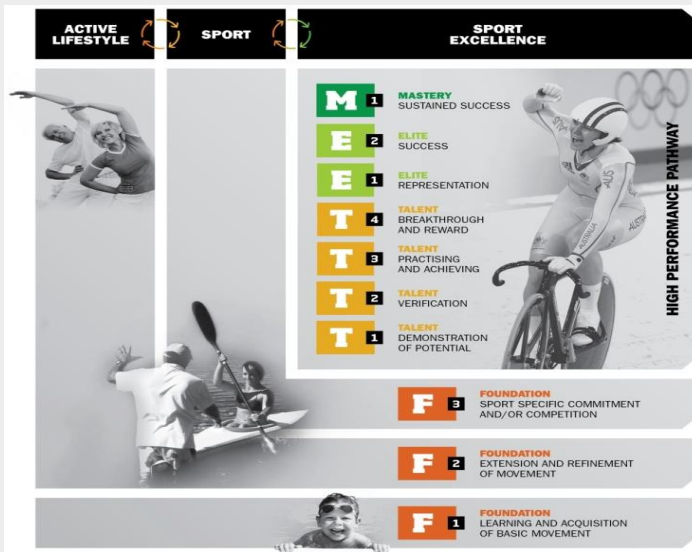


An integrated framework for the optimisation of sport and athlete development: A practitioner approach

JASON P. GULBIN, MORAG J. CROSER, ELISSA J. MORLEY, & JUANITA R. WEISSENSTEINER

Australian Institute of Sport, Athlete Pathway Development, BRUCE, Australia

(Accepted 27 February 2013)



Deductive reasoning: Literature review on various athlete development models

Inductive reasoning: AIS experiences over 20 years



Journal of High Performance Sport 4(2019)105-119

総説

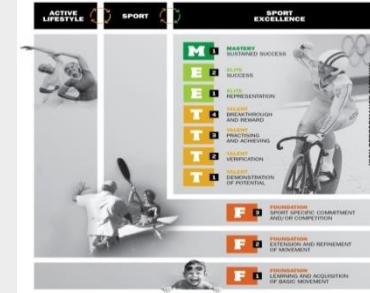
アスリート育成パスウェイにおける国際モデルのシステマティックレビュー
The systematic review of the international models of athlete development pathway

衣笠泰介^{1,2)}, Elissa Morley^{1,3)}, 船先康平⁴⁾, 藤原昌^{1,2)}, Jason Gulbin^{1,3)}
Taisuke Kinugasa^{1,2)}, Elissa Morley^{1,3)}, Kohei Funasaki⁴⁾, Akira Fujiwara^{1,2)},
Jason Gulbin^{1,3)}

The latest research findings should be able to be discarded by athlete development practitioners as necessary, taking into account the country, culture, and characteristics of the sport etc

Original FTEM framework

Published in 2013



Literature review

489 Screened papers

79 Reviewed papers



JSC practices

27 NFs

26 Local governments

Various Projects from 2012 to 2019

平成24～25年度「メダルポテンシャルアスリート育成システム構築事業（文部科学省委託事業）」

平成26年度「2020ターゲットエイジ育成・強化プロジェクト（タレント発掘・育成コンソーシアム）（文部科学省委託事業）」

平成27年度「タレント発掘・育成コンソーシアム事業（JSC競技力向上事業）」

平成28～30年度「アスリートパスウェイの戦略的支援事業（JSC競技力向上事業）」

The Framework “The Japanese FTEM”



The evidence-informed framework for holistic and integrated sport and athlete development pathways

Collecting insights from best practices in athlete development

Profiling of Olympic Multi-Medalists

Sports Med (2016) 46:1041–1058
DOI 10.1007/s40279-016-0476-2



REVIEW ARTICLE

The Great British Medalists Project: A Review of Current Knowledge on the Development of the World's Best Sporting Talent

Tim Rees¹ · Lew Hardy² · Arne Güllich³ · Bruce Abernethy⁴ · Jean Côté⁵ ·
Tim Woodman² · Hugh Montgomery⁶ · Stewart Laing⁷ · Chelsea Warr⁷

Performer

- ✓ Relative age effect
- ✓ Genetic profiles
- ✓ Physical and physiological
- ✓ Psychological and personality

Environment

- ✓ Birthplace effect
- ✓ Entourage (eg parents, family and coaches)
- ✓ Athlete support (eg jr to senior conversion)

Practice and training

- ✓ Deliberate practice (eg 10,000 hr rule)
- ✓ Early vs late specialization

Profiling of Olympians

Talent Development & Excellence

149

Vol. 2, No. 2, 2010, 149–164

A Look Through the Rear View Mirror: Developmental Experiences and Insights of High Performance Athletes

Jason P. Gulbin^{1*}, Karen E. Oldenzel¹, Juanita R. Weissensteiner¹ and François Gagné²

- ✓ Having the patience to practice again and again the same skills
- ✓ Showing perseverance and determination when facing obstacles
- ✓ Being autonomous
- ✓ Being **competitive**
- ✓ Showing resilience
- ✓ Tolerating the pressure during a competition
- ✓ Remaining totally focused during practice or competition

Natalie du Toit (RSA: Swimming)

Beijing 2008

Olympic (OW) 16th

Paralympic 5 Gold medals
(overall 13 gold)



見本

競技の説明や
ルールの概要。

オリンピックのメダリスト等の体型イメージと身長 / 体重の平均値を示しています。
(原則、ロンドン2012大会及びリオ2016大会のメダリスト)

Athletics
陸上競技 [短距離、跳躍、投擲]

ハンマー投や走高跳などの「フィールド」種目、400m以下の短距離走や障害物を使ったハードルなどの「トラック」種目

■ 体格 [オリンピックの特徴]

性別	身長	体重
男子	185.7 ± 8.2cm	85.5 ± 18.4kg
女子	173.5 ± 7.9cm	67.8 ± 15.6kg

■ 競技力とコーチ数 [日本の環境]

日本の国際競技力 (縦軸: 高い/低い) vs コーチ数 (横軸: 少ない/多い)

■ 育成期間

男子: スポーツ開始 13.3歳, メダル獲得 26.9歳, 競技終了 40歳

女子: スポーツ開始 11.9歳, メダル獲得 27.0歳, 競技終了 37歳

■ スポーツ歴

■ 競技人口

中体連: 223,437人
高体連: 108,286人
全競技登録者: 417,435人

■ オリンピック選手になれる確率

男子: 51 / 270,000人
女子: 51 / 147,435人

■ メダリストが、過去に実施していたスポーツを示しています。
(原則、ロンドン2012大会及びリオ2016大会のメダリスト)

■ メダリストがそのスポーツを始めた年齢とメダルを獲得したときのそれぞれの平均年齢等を示しています。
(原則、ロンドン2012大会及びリオ2016大会のメダリスト)

■ 赤は、スピード・パワー系
■ 青は、持久系
■ 黄は、マルチ系

日本の国際競技力とコーチの数を示しています。
(原則、国際競技力はアテネ2004大会〜リオ2016大会の最高順位の平均より算出、コーチ数は2017年時点の人数)

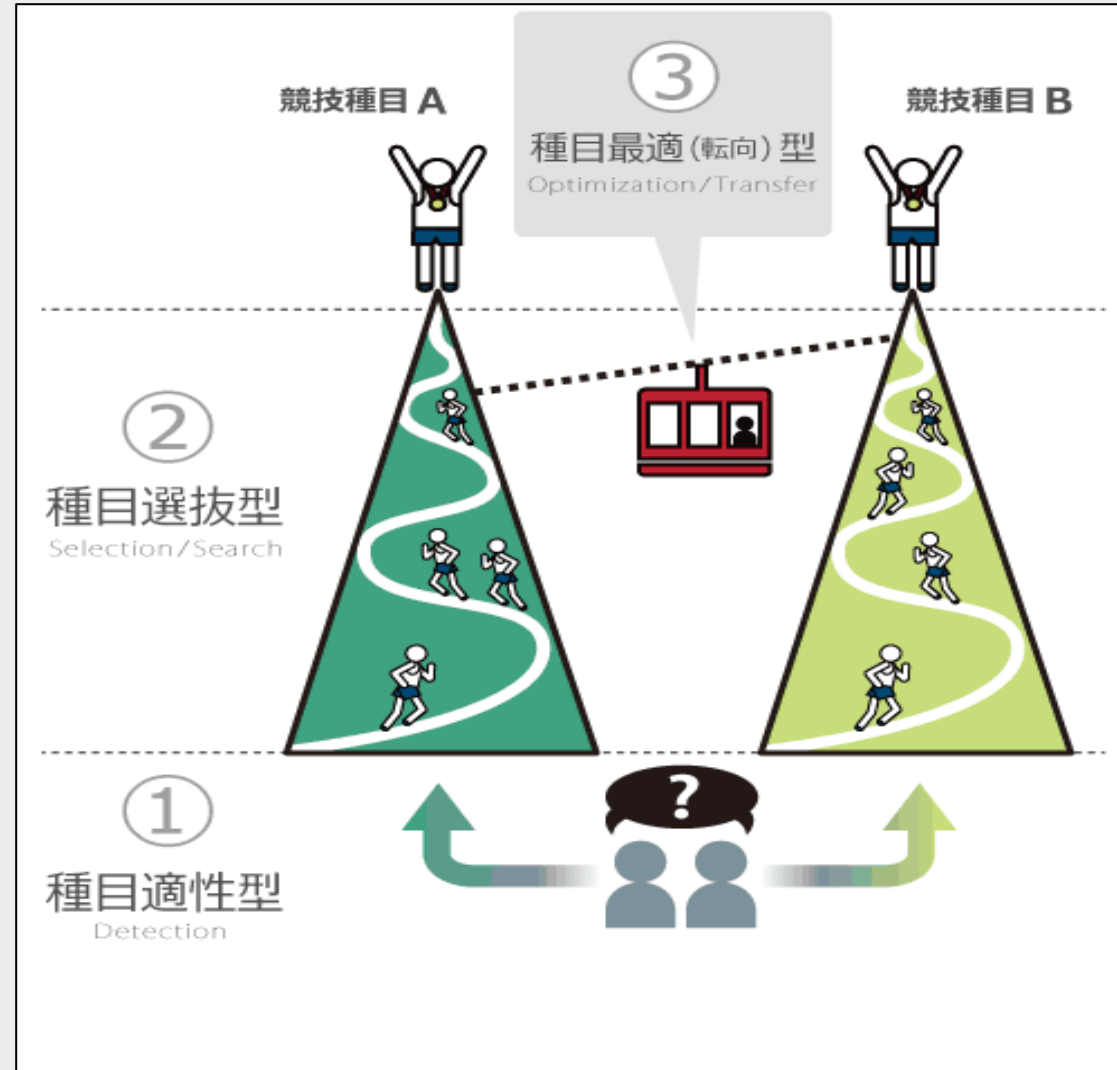
中体連、高体連、全競技者の登録人数に対するその競技の占める割合を示しています。
(原則、2017年の登録人口)

黒字は、日本のその競技の登録人口を、赤字は、日本からオリンピックに出場できる最大の人数を示しています。
(原則、競技人口は2017年の登録人口、オリンピックに出場できる最大の人数は、東京2020大会の出場可能人数)

Pathway Development Strategies

F (Foundation)			T (Talent)				E (Elite)			M (Mastery)
F1	F2	F3	T1	T2	T3	T4	E1	E2	E3	M
Beginning deliberate play and learning a range of foundational movement skills (running, jumping, throwing, and object control)			Identifying promising athletes aiming for high performance through sports science testing and coaches' eyes		Committing to higher training volume and participating in appropriate competitions to prepare for international competitions		Achieving competition results as athletes and breakthroughs are rewarded for their efforts			Selected as a senior representative via the national team selection or gained professional status
Improving and enhancing the foundational movement skills through physical education and diverse sport experiences while having fun	Participating in sports-specific training and competitions by taking into account growth and development		Confirming identified talents and athletes to assess their competencies, psychological skills, physiological characteristics etc	Achieving top 8th finished at the most recent World Championships etc	Medals won at World Championships, Olympic Games, Paralympic Games, etc and honors earned in professional leagues		Sustained multi-cycle success in the world's premier international competitions or professional leagues			

3 Types of Talent Identification & Development (TID)



Why National Approach for Talent ID and Athlete Pathways?

1961 Sports Promotion Act

2000 Basic Plan for the Promotion of Sports

→ Local TID Projects

2011 Basic Act on Sport

2012 Sport Basic Plan

→ JSC Athlete Pathway Development Project

The Review Article on TID in Japan



Sports Science in Elite Athlete Support 3 (2018) 15-26

総説

我が国におけるタレント発掘・育成に関する取組の変遷
Historical development of talent identification and
development initiatives in Japan

衣笠泰介^{1),2)}、藤原昌^{1),2)}、和久貴洋^{1),2)}、Jason Gulbin¹⁾
Taisuke Kinugasa^{1),2)}, Akira Fujiwara^{1),2)}, Takahiro Waku^{1),2)}, and Jason Gulbin¹⁾

Historical development of TID initiatives based on sports policies

Improvement in the local communities with a focus on Olympic sports outside of school club activities

A paradigm shift from TID to athlete development pathways

THE GREAT BRITISH MEDALISTS PROJECT

The Development of the World's Best Sporting Talent

1. THE PERFORMER



BIRTHDATE

Relative age effects exist but may not be robust across all sports



PSYCHOLOGY & MOTIVATION

Psychological factors (e.g. motivation, confidence, perceived control, mental toughness, resilience, coping with adversity, resistance to 'choking') appear to be important contributors to the development of super-elite performance



GENETICS

Genetics may influence and thus limit the development of performance. Performance cannot, however, be well predicted from genetic factors



ANTHROPOMETRIC & PHYSIOLOGICAL FACTORS

Anthropometric and physiological factors are important for performance. However, caution should be urged when using tests for talent selection purposes with adolescents because of variation in biological maturation

PERSONALITY TRAITS

Super-elite athletes are conscientious, optimistic, hopeful & perfectionist

2. THE ENVIRONMENT



BIRTHPLACE

Small-to-medium communities provide favourable environments for developing athletes. Talent hotspots may exist

SUPPORT FROM PARENTS, FAMILY, SIBLINGS & COACHES

Super-elite athletes have benefitted from supportive families, coaches and networks during their development. The subtleties of the provision of support are not well understood



ATHLETE SUPPORT PROGRAMMES

Early success is a poor predictor for later super-elite success, and thus for early talent identification purposes. Super-elite success is mostly preceded by relatively late entry into organized support programmes

3. PRACTICE & TRAINING

VOLUME OF SPORT-SPECIFIC PRACTICE & TRAINING

Super-elite performance develops from extensive deliberate practice, but the applicability of the 10 years/10,000 hours 'rule' to high-performance sport is limited. Play may also be relevant, as may implicit/automatic and incidental skill learning



EARLY SPECIALIZATION VS. SAMPLING AND PLAY

The key to reaching super-elite level may be involvement in diverse sports during childhood and appreciable amounts of sport-specific practice/training in late adolescence and adulthood

A Survey of Japanese Youth Athletes



Pathway Development Experiences of Talented Japanese Athletes

Taisuke Kinugasa¹ and Jason P. Gulbin^{2,3}

¹High Performance Sport Center, Japan Sport Council, Japan

²International Sport Advisory Services, Australia

³Bond Business School, Bond University, Australia



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A national survey was conducted with 604 talented Japanese athletes across 53 sports to identify the characteristics of the Japanese compared to internationally advocated practices (Kinugasa et al, 2019a)

The transitional trajectory (milestones) of talented Japanese athletes revealed in this study broadly parallels previous non-Asian centric international athlete development research

Hypothesis of The Study

	F (Foundation)	T (Talent)	E (Elite)	M (Mastery)
Individual (Micro)	Deliberate play (Côté & Vierimaa, 2014)	Talent transfer (Bullock et al, 2009; MacNamara & Collins, 2015)		
Sport (Meso)	Diverse sports experience : Sampling (Côté & Vierimaa, 2014; Güllich, 2017)	Experience in other sports (Güllich, 2017)		
System (Macro)	Quality coaching (Bergeron et al, 2015; Gulbin et al, 2010)	Relative age effect (Cobley et al, 2009; Cumming et al, 2017 ; Mann & van Ginneken, 2017; Smith et al, 2018; Turnnidge et al, 2014)		
	Specialisation (Baker et al, 2009; LaPrade et al, 2016)	Birthplace effect (Turnnidge et al, 2014)		
	Family support (Bergeron et al, 2015; Evans et al, 2018; Gulbin et al, 2014; Lloyd et al, 2016)	Deliberate practice (Ericsson et al, 1993)		
		Deliberate programme (Bullock et al, 2009)		

To use interdisciplinary research designs to identify the overall picture of factors and elements related to Japanese athlete development TID from a large, retrospective cohort study.

Methods



Participants pool: **1,724 Japanese youth athletes** at Local TID Projects over 26 regions were invited



Survey items were selected based on the hypothesis of this study (187 items in 23 domains)

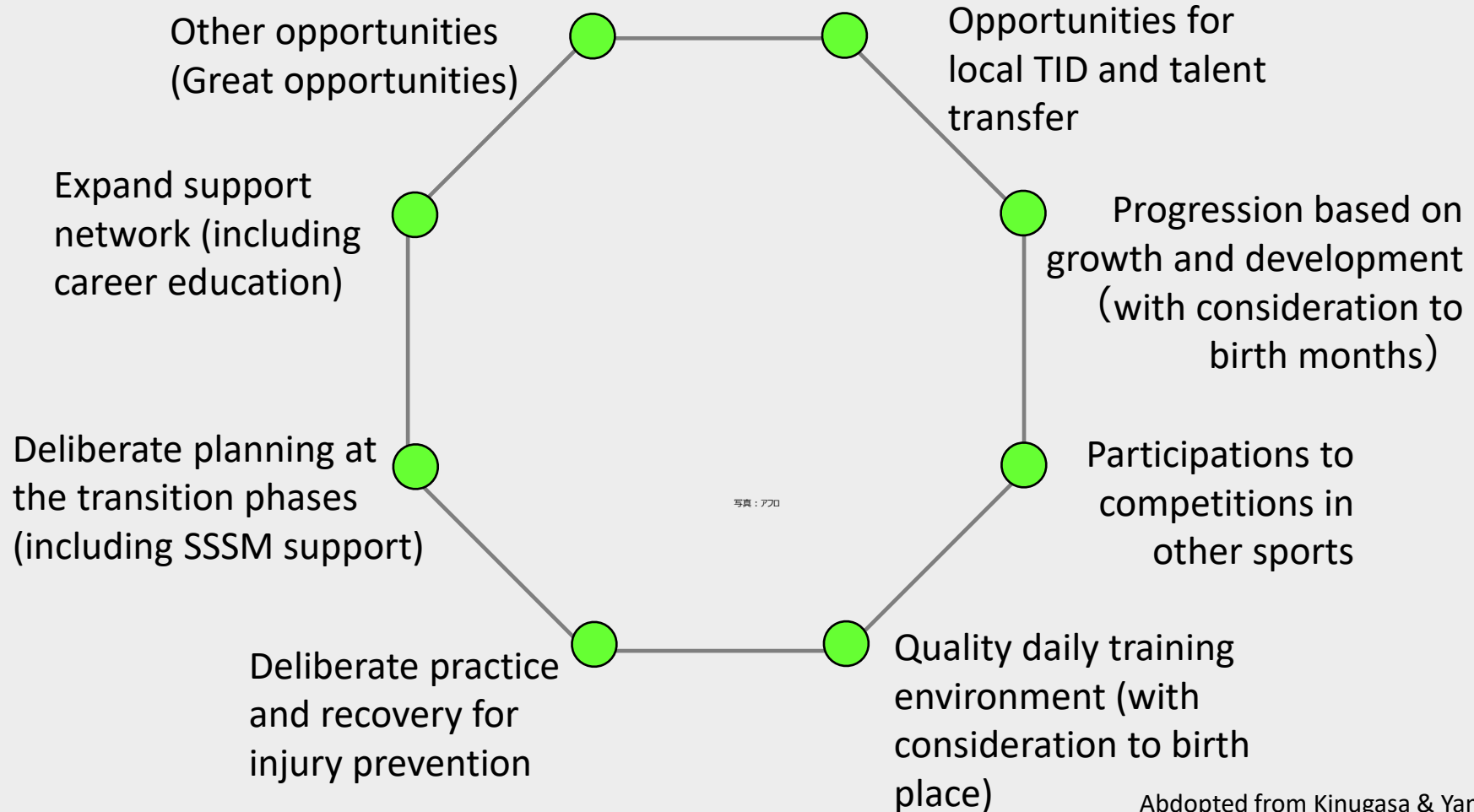
*The reliability and validity of the survey items have been demonstrated ($0.80 \leq r \leq 1.00$) in similar previous studies (Güllich & Emrich, 2014)

Survey method: mailed the survey form or web-based survey (JOC Survey 2014-2018; Hopwood et al, 2013)

Survey period: December 2017 to October 2018



Respondents: **604 respondents** from 53 Olympic sports (290 males; 15.0 ± 2.3 years old, 314 females; 15.1 ± 2.0 years old); Valid response rate: **35.0%**



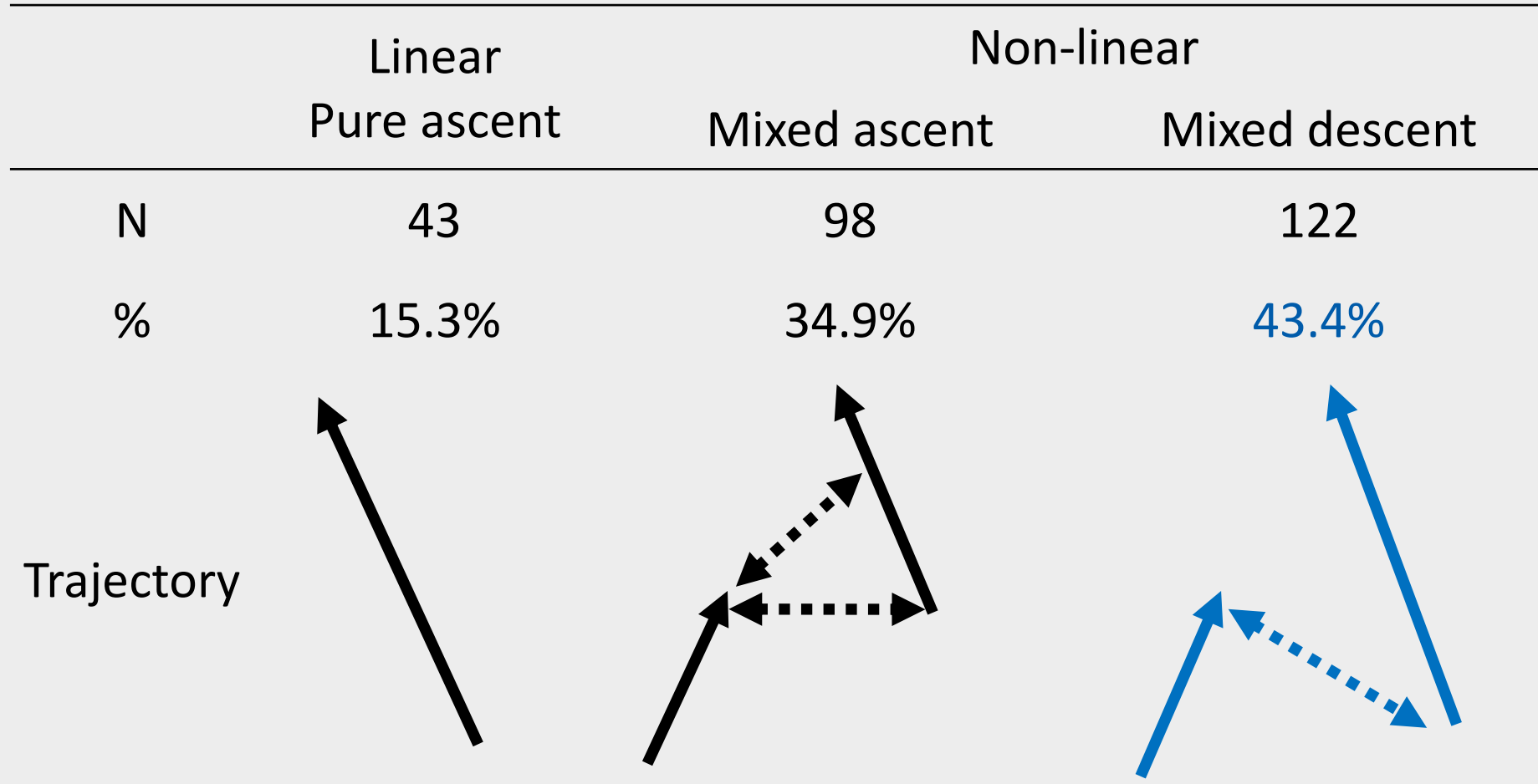
写真：アフロ

Deliberate Planning

Adopted from Kinugasa & Yamashita (2023) "The Road to Becoming Top Athletes", Total Conditioning Guidelines for Athletes, Japan Sport Council, Japan High Performance Sports Center, pp. 345

Pathway Trajectories of Japanese HP Athletes

→ JSC Dual Career Survey (2014) analysed data of 281 Olympians



Junior to Senior Transition

Junior (T4 stage at FTEM)

Athletic identity encourages people to focus on competition and pays great effort in transition (Frank & Stambulova, 2019)

Senior (E1 stage at FTEM)

Physical: marginal gain, training volume etc
 Mental: identity, will etc
 Social: visibility etc
 Financial: scholarships, sponsors etc
 Legal: adulthood, professional contract etc

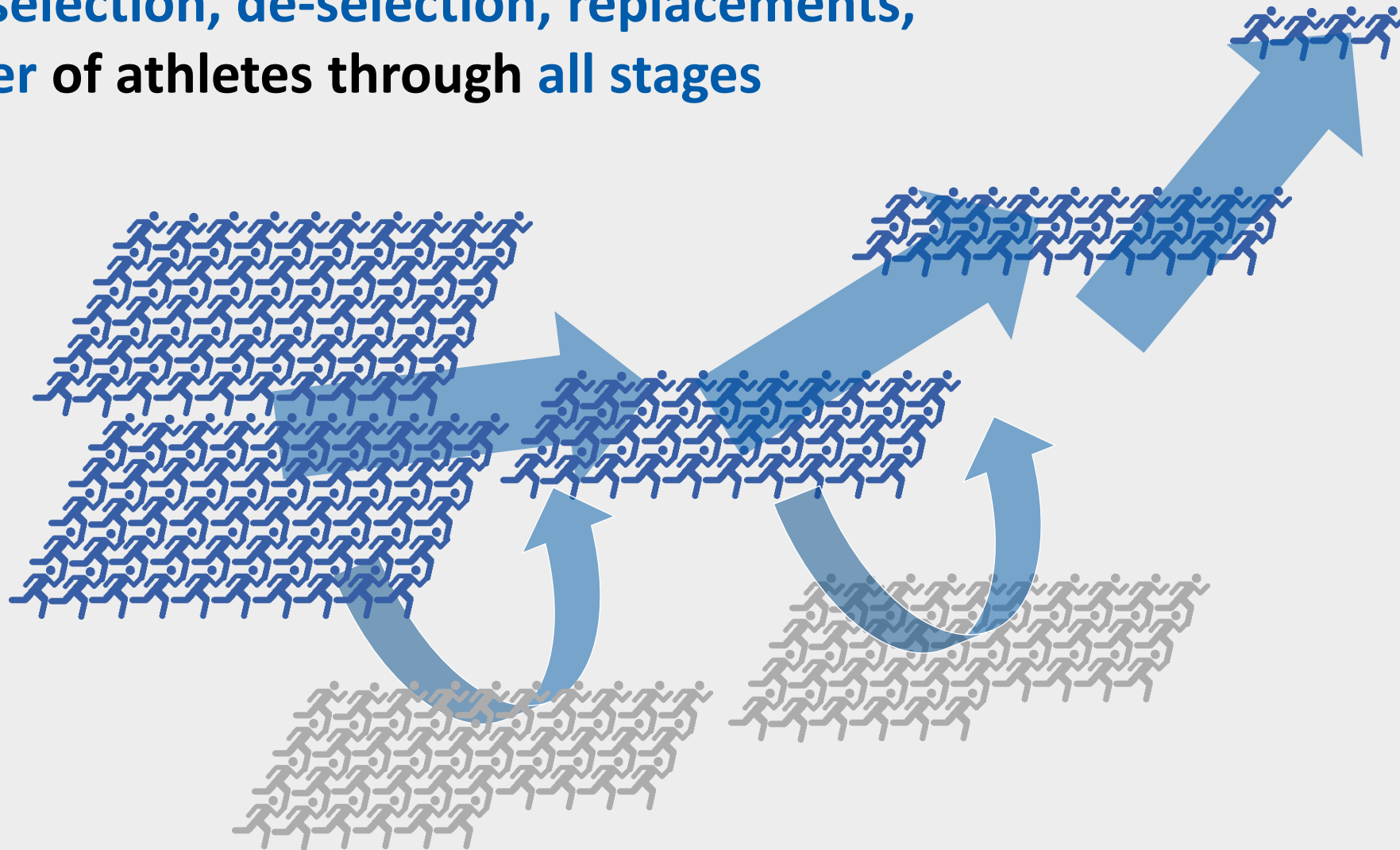
Transition trajectories are non-linear (Frank & Stambulova, 2018; Gulbin et al, 2013)

Transition rate of 20-30% + high drop-out rate? (Franck, 2018; Stambulova, 2009; Vanden Auweele et al, 2004)

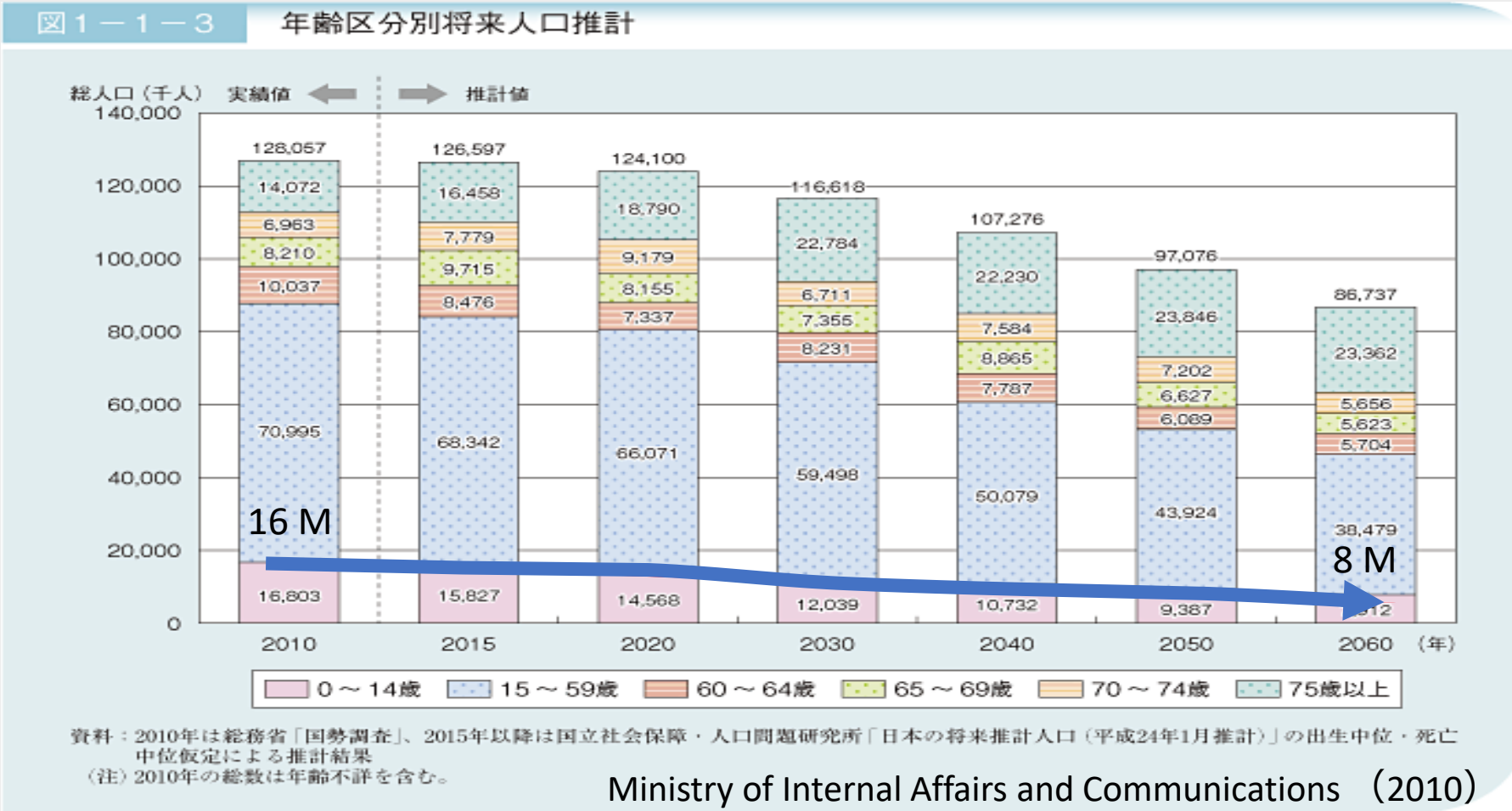
The transition from junior to senior years is the most difficult transition in an athlete's career (Stambulova, 2000)

→ Needs breakthroughs!

Repeated selection, de-selection, replacements, and transfer of athletes through all stages



Birth Rate Declines in the Next 50 Years



→ Meta-analysis with 6,096 athletes

What Makes a Champion? Early Multidisciplinary Practice, Not Early Specialization, Predicts World-Class Performance

Perspectives on Psychological Science
1–24
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sagepub.com/journals-permissions
DOI: 10.1177/1745691620974772
www.psychologicalscience.org/PPS
SAGE

Arne Güllich¹, Brooke N. Macnamara², and David Z. Hambrick³

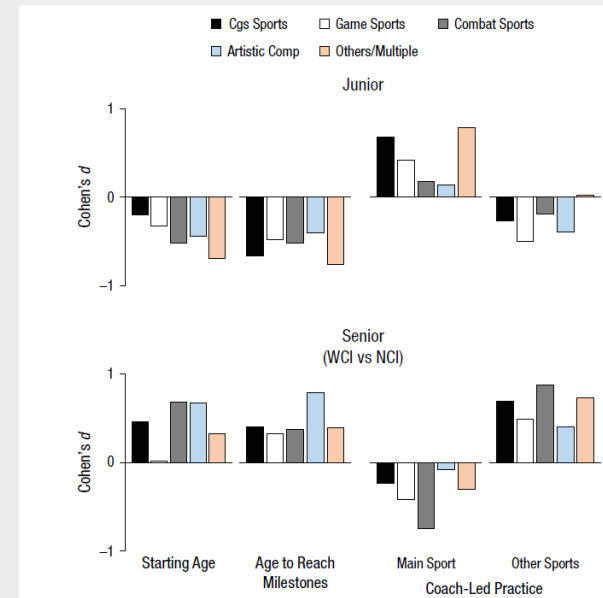
¹Department of Sport Science and Institute of Applied Sport Science, Kaiserslautern University of Technology; ²Department of Psychological Sciences, Case Western Reserve University; and ³Department of Psychology, Michigan State University

The Foundation Stage

Table 4. Overview of Predictor Effects on Relatively Higher Sports Performance: Overall Effects (Across All Performance Levels) and Effects Among the Highest Performance Levels (World Class vs. National Class)

Predictor	Better junior performance		Better senior performance	
	Overall	Highest levels	Overall	Highest levels
Age-related predictors				
Main-sport starting age	Earlier	—	Later	Later
Age to reach milestones	Earlier	Earlier	Later	Later
Amount of sport activities				
Practice in main sport	More	More	—	Less
Practice in other sports	Less	—	More	More
Play in main sport	—	—	—	—
Play in other sports	—	—	—	—

Note: The direction of the effect is specified only if $\bar{d} > |0.20|$. — = negligible effect ($\bar{d} \leq |0.20|$). The blank cell indicates that there were insufficient effect sizes to calculate a mean.



✓ **JPN** (Kinugasa & Gulbin, 2021)

The T4 stage athletes start training and competing later than the T3 athletes

The T4 and T3 stage athletes experienced more sports than the T2 athletes

→ ~30% responded as diverse sports experiences were “very helpful for their current main sport”.

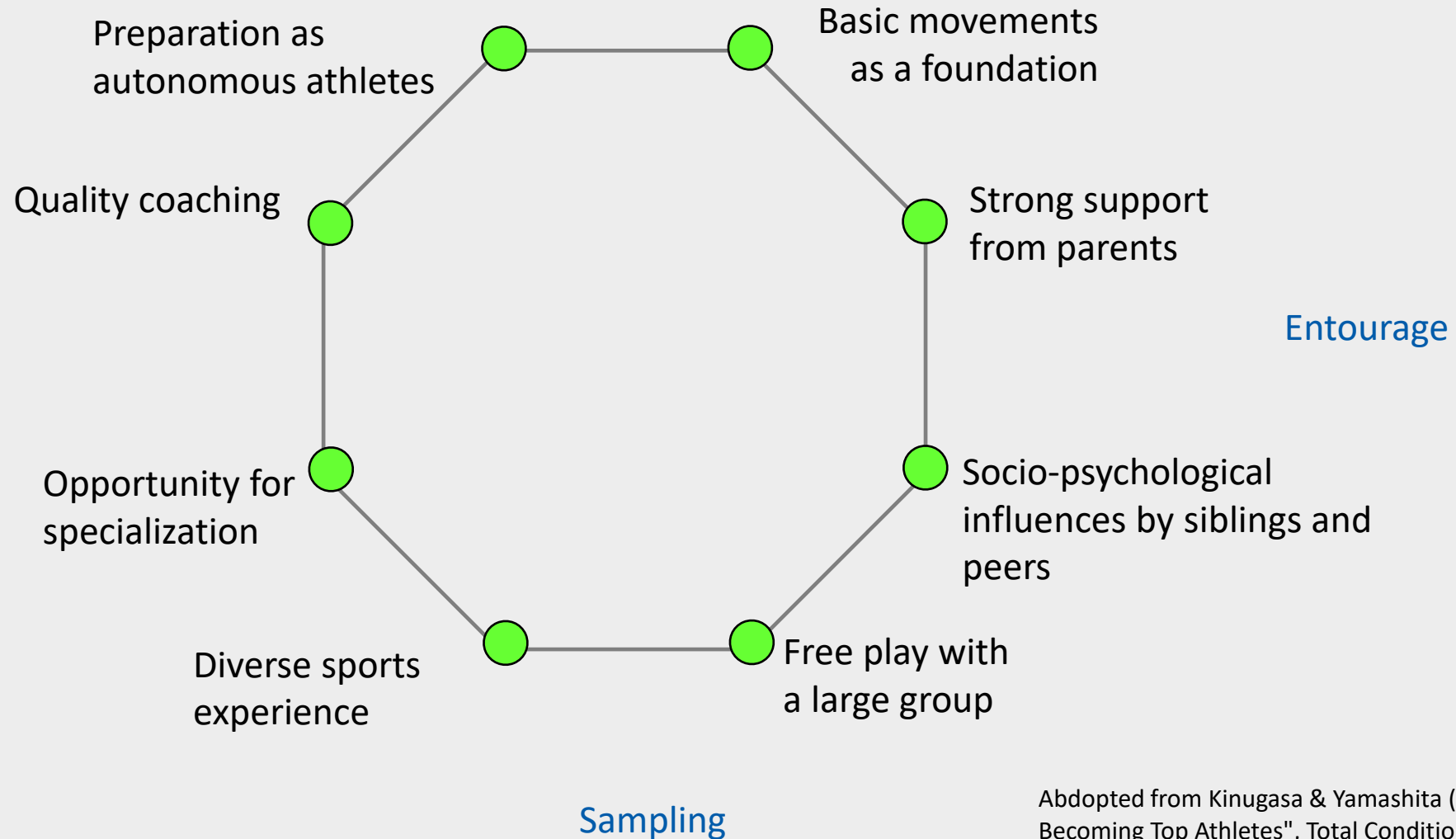


Proposed FDES framework

✓ **SIN** (a collaborative research project by NYSI and JSC)
Preliminary data from 51 athletes (29 Canoe/Kayak; 22 Water Polo)

78.4% had multi sport exposure before specialisation

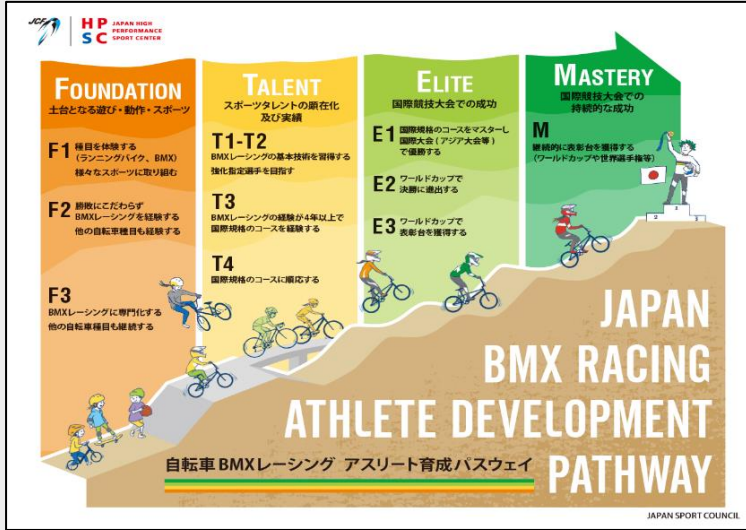
52.9% participated in at least 2 sports



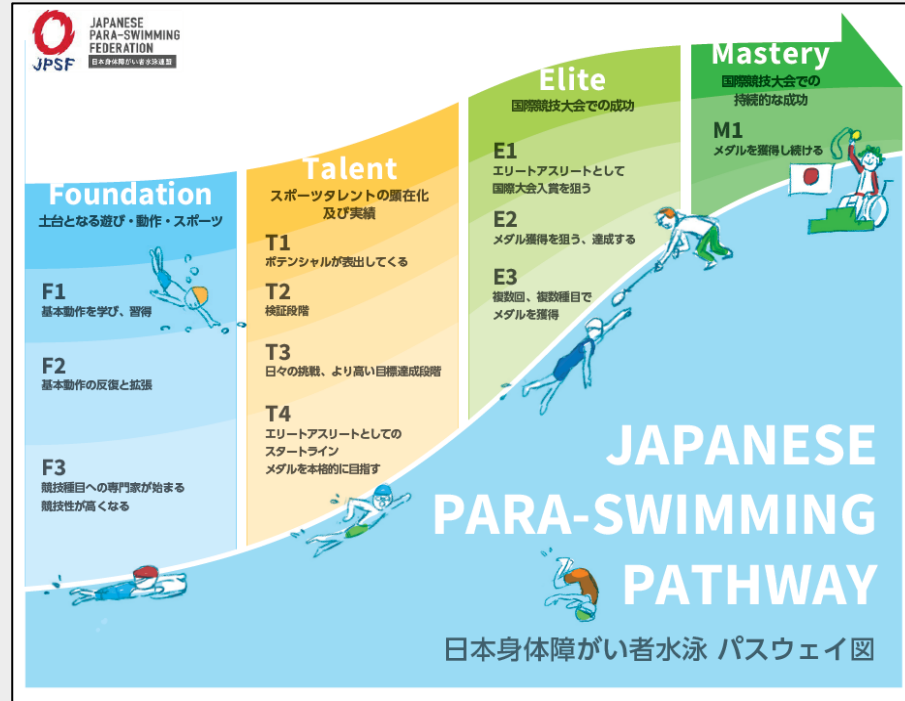
Abdopted from Kinugasa & Yamashita (2023) "The Road to Becoming Top Athletes", Total Conditioning Guidelines for Athletes, Japan Sport Council, Japan High Performance Sports Center, pp. 345

Communicating with The Common Language

F (Foundation)			T (Talent)				E (Elite)			M (Mastery)
F1	F2	F3	T1	T2	T3	T4	E1	E2	E3	M
Beginning deliberate play and learning a range of foundational movement skills (running, jumping, throwing, and object control)	Improving and enhancing the foundational movement skills through physical education and diverse sport experiences while having fun	Participating in sports-specific training and competitions by taking into account growth and development	Identifying promising athletes aiming for high performance through sports science testing and coaches' eyes	Confirming identified talents and athletes to assess their competencies, psychological skills, physiological characteristics etc	Committing to higher training volume and participating in appropriate competitions to prepare for international competitions	Achieving competition results as athletes and breakthroughs are rewarded for their efforts	Selected as a senior representative via the national team selection or gained professional status	Top 8th finished at the most recent World Championships etc	Medals won at World Championships, Olympic Games, Paralympic Games, etc and honors earned in professional leagues	Sustained multi-cycle success in the world's premier international competitions or professional leagues



Para-Swimming Pathway Model



JAPANESE PARA-SWIMMING FEDERATION JPSF
日本身体障がい者水泳 FTEM 段階図

FTEM	FOUNDATION 土台となる遊び・動作・スポーツ			TALENT スポーツタレントの顕在化及び実績				ELITE 国際競技大会での成功			MASTERY 国際競技大会での持続的な成功
段階	F1	F2	F3	T1	T2	T3	T4	E1	E2	E3	M1
アスリートの全体像	<ul style="list-style-type: none"> 水泳を楽しむ、遊びがもたらした能力を競う中で徐々に競技的行動力が増える。 競技的要素を7段階で表出してくる。国際大会や国際大会で活躍するための準備が整っている。 			<ul style="list-style-type: none"> 自己の能力を高め、他の選手と競い合えるようになる。 国際大会において競技的準備を整え、トレーニングのテクノロジーを理解し、トレーニング期間を延ばすことができるようになる。 				<ul style="list-style-type: none"> 自己の強みに挑戦し、国際大会で勝負するための準備が整っている。競技力、精神力、精神力が競い合える選手である。 国際大会の優勝競争を競うことで、自身の強みを競い合える選手である。 			<ul style="list-style-type: none"> 国際大会で活躍し続けるための準備が整っている。競技力、精神力、精神力が競い合える選手である。
競技パフォーマンス	<ul style="list-style-type: none"> 「遊んだり、遊びながら」水泳を楽しむ。 水泳の基本動作を学び、習得する。 競技的要素を7段階で表出してくる。 			<ul style="list-style-type: none"> 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 				<ul style="list-style-type: none"> 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。 			<ul style="list-style-type: none"> 「遊んだり、遊びながら」水泳を楽しむ。競技的要素を7段階で表出してくる。
年齢	～9歳			10～19歳				20～29歳			30～39歳

Communication tools:
The use of “the athlete’s voice” to inform **real** athlete development pathways



Please access to the video here

Voices on The Pathway Model Development



(HP Director)

Can visualize the NF activities by using the Japanese FTEM



(Medalist)

Can expect what programs are needed to move to the next level



(Local Coach)

Can set goals and tasks according to the development stages

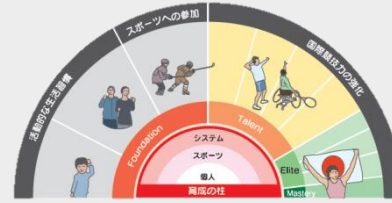
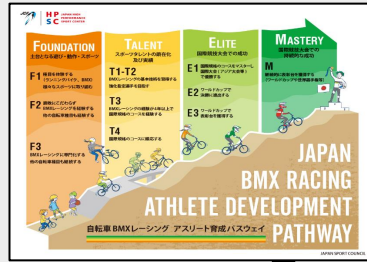
3rd Sport Basic Plan

Specific measures for "Establishment of Athlete Development Pathways"

Support each NF to establish an athlete development pathway that integrates the process from talent identification and development to high performance, while using "the Japanese FTEM" etc. In doing so, give due consideration to the careers of elite athletes after they retire.

What's Next?: Japanese FTEM Roll-out Plan

1. Develop a pathway model



2. Conduct gap analysis using the pathway health check

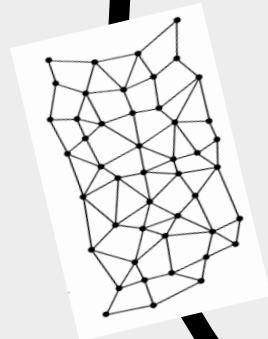


Sport-specific pathway models in aligned with the National Strategic Plans

3. Provide support and resources based on the National Strategic Plan



5. Revise the pathway model



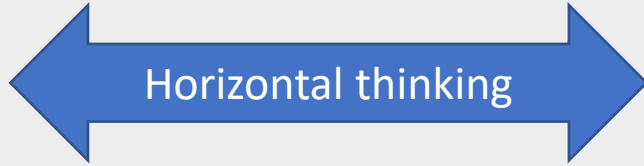
4. Promote athlete development pathways initiatives:
Assign a full-time coordinator

Co-design

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Co-design needs Joint Up Thinking

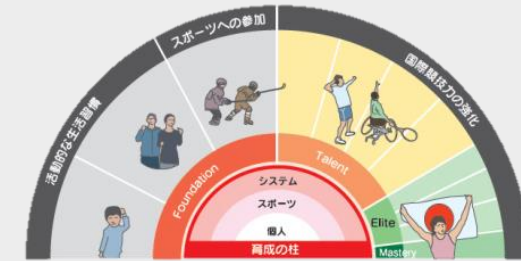
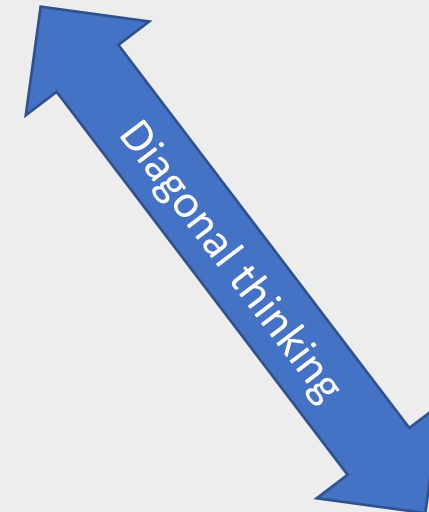
Q1. What is required to become Mastery stage athletes?
 (What are the bio-psychol-social profiles at each stage?)



Q2. What is needed for talented athletes to move upwards?
 (Which pathway factors can facilitate the transitions?)



Q3. How do the multifaced factors interact?
 (What are the interrelationships between the pathway factors?)



Evidence-based practice

Evidence-informed practice

Practice

Evidence

Practice-informed evidence

Practice-based evidence

Their `real-life' experiences of high performance athletes as “the athlete’s voice” could provide additional insights to help refining pathways for the next generation of athletes.

Gulbin et al, 2010

**Raise The Future
With The Power of Sport**

