



SPORTS ENGINEERING

**MAKES SPORTS
BEAUTIFUL
SAFE & BETTER**



**SPORTS & MANAGEMENT
RESEARCH INSTITUTE**
MAKING INDIA SPORTS SUPERPOWER



SPORTS ENGINEERING RESEARCH TEAM

THIS BOOK IS PREPARED IN PUBLIC INTEREST BY
DEPARTMENT OF SPORTS ENGINEERING
SPORTS & MANAGEMENT RESEARCH INSTITUTE (SMRI)

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SPORTS ENGINEERING ORIGINATING IN MIND

THERE IS AN ENGINEER IN EVERY HEART.
ESPECIALLY A **SPORTS ENGINEER**.

MAKING A PAPER PLANE OR PREPARING A HOPSCOTCH
COURT OR MAKING BAT FOR CRICKET, SHOWS YOUR
INNATE **SPORTS ENGINEERING SKILLS**.

IN FUTURE, YOU CAN MAKE AN AIRPLANE FOR AIR RACE
WORLD CHAMPIONSHIP OR PREPARE PITCH FOR INDIA
VS PAKISTAN CRICKET TEST.

ADVANTAGE PLAY

TECHNOLOGIES THAT CHANGED
SPORTING HISTORY

SPORTS ENGINEERING GENESIS

SPORTS ENGINEERING IS RELATIVELY A NEW BRANCH IN ENGINEERING. IN 1998, IT BECAME AN INDEPENDENT DISCIPLINE DUE TO THE EFFORTS OF **PROF. STEVE HAAKE** AND **SHEFFIELD HALLAM UNIVERSITY** OF UNITED KINGDOM. THE ESTABLISHMENT OF INTERNATIONAL SPORTS ENGINEERING ASSOCIATION (ISEA) OFFICIALLY HERALDED THE BEGINNING OF A NEW ERA IN SPORTS AND ENGINEERING- SPORTS ENGINEERING. **SPORTS & MANAGEMENT RESEARCH INSTITUTE (SMRI)** IS THE PIONEERING INSTITUTE IN INDIA WHICH OFFERS SPORTS ENGINEERING COURSES, RESEARCH & CONSULTACY.



SPORTS ENGINEERING

DEFINITION

SPORTS ENGINEERING IS THE ART AND SCIENCE OF DESIGNING, MAKING AND MAINTAINING OF DIFFERENT SPORTS GOODS, SPORTS INFRASTRUCTURE AND OTHER SUPPORTIVE PRODUCTS. BUT, IN DEEPER SENSE, SPORTS ENGINEERING STUDIES THE SCIENTIFIC ASPECTS OF SPORTS PERFORMANCE BY ANALYSING THE PERFORMANCE OF ATHLETES, SPORTS GOODS AND OTHER MATERIALS INFLUENCING THE SPORTS PERFORMANCE WITH THE OBJECTIVE OF ENHANCING THE SPORTING EXPERIENCE IN ALL ASPECT.



SPORTS ENGINEERING SEGMENTS

SPORTS ENGINEERING INCLUDES A WIDE RANGE OF SUBJECTS RELATED TO SPORTS IN ITS WINGS. THE FOLLOWING PAGES WILL GIVE YOU A BRIEF IDEA ABOUT VARIOUS SEGMENTS COMING UNDER THE UMBRELLA OF SPORTS ENGINEERING.



1. SPORTS GEAR

GAMING GEARS: BALLS, FLYING DISCS, GOAL POSTS, NETS, RACQUETS, FISHING RODS AND TACKLE, HOCKEY STICKS, BATS, GOLF CLUBS, WICKETS AND BASES, BOARDS FOR SURFING, SKATEBOARDING ETC, SKATES FOR SPORTS LIKE ROLLER SKATING AND ICE SKATING, SKIS FOR SKIING AND WATER SKIING, DIFFERENT SHOES, KAYAKS, JAVELIN...

PROTECTIVE GEARS: FOOTBALL HELMET, JOCK STRAP, MOUTH GUARDS, SHIN PADS, SKI SUITS, ELBOW PADS, SHOULDER PADS, BICYCLE HELMET, SPORTS GLOVES...



2. SPORTS ACCESSORIES

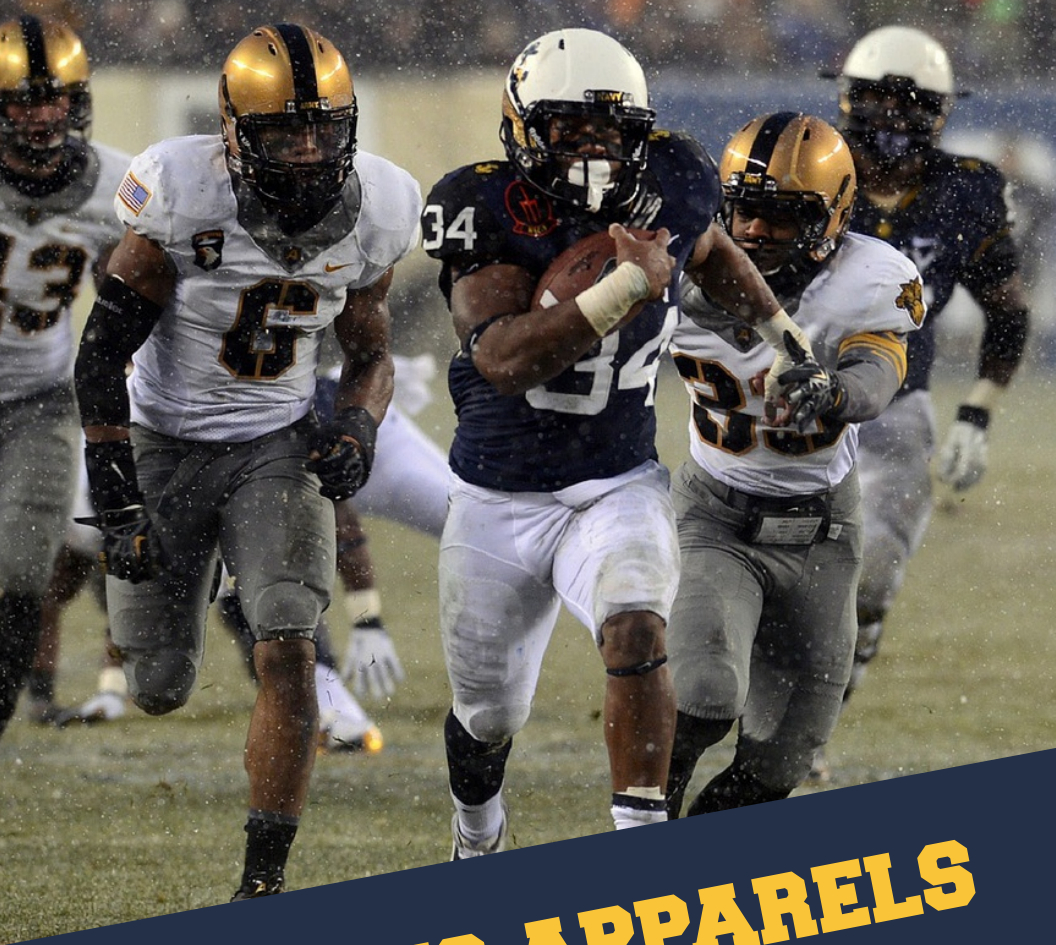
SPORTS COACHING EQUIPMENT: CONES, MARKERS, SPEED LADDERS, SWISS BALLS, AGILITY LADDERS, WEIGHTS, CHIN-UP BARS, SPEED AND AGILITY HURDLES, TRAINING BELTS, AGILITY POLES, COACHING STICKS, PLYO HURDLES, RESISTANCE CHUTE, PUSH PULL SLED, POWER JUMPER, POWER STEPPER, RESISTANCE BANDS, AGILITY RINGS...

OTHER ITEMS SUCH AS BALL BAG, WATER BOTTLES & SHAKERS



3. TURF EQUIPMENT

DIFFERENT EQUIPMENT TO PREPARE SPORTS FIELD SUCH AS MOWERS, AERATORS, BUNKERS, FIELD RAKES, TOP DRESSING EQUIPMENT, TRACTORS, ROLLERS, LINE MARKING EQUIPMENT, VACUUM SWEEPERS, VERTICUTTERS, BLOWERS, SPRAYERS, DRAG MATS, GROOMERS



4. SPORTS APPARELS

TYPICAL SPORTS APPARELS INCLUDE TRACKSUITS, SHORTS, T-SHIRTS AND POLO SHIRTS. SPECIALIZED APPARELS INCLUDE SWIMSUITS (FOR SWIMMING), WET SUITS (FOR DIVING OR SURFING), SKI SUITS (FOR SKIING) AND LEOTARDS (FOR GYMNASTICS). SPORTS FOOTWEAR INCLUDE TRAINERS, FOOTBALL BOOTS, RIDING BOOTS, AND ICE SKATES. SPORTSWEAR ALSO INCLUDES BIKINI AND SOME CROP TOPS AND UNDERGARMENTS, SUCH AS THE JOCKSTRAP AND SPORTS BRA.



5. FITNESS EQUIPMENT

DUMBBELLS, KETTLEBELLS, BARBELLS, WEIGHT PLATES, COLLARS, WEIGHT MACHINES, CABLES, ROWERS, HEAD/NECK HARNESS, ELASTIC BANDS(RESISTANCE BANDS), CHAINS, SLING SHOTS, SHOES, BELTS, FITNESS BALLS, BARS, TREADMILLS, EXERCISE BIKES, ELLIPTICAL TRAINERS, STEP MACHINES, BENCHES, VIBRATORS, ROPES, GLOVES ...



6. PARKS AND PLAYGROUND

PARKS & PLAYGROUND EQUIPMENT SUCH AS SEESAW,
ROPE BRIDGE, CLIMBERS, PLAYHOUSE, PLAY SYSTEMS,
SWINGS, SLIDES, MOTION SPINNERS, TRAILS, ZORBING
BALL, JUMPING BOUNCER, REVOLVING PLATFORM,
TRAMPOLINE AND PLAYGROUND TUNNEL



7. AMUSEMENT PARKS

PLAY SYSTEMS, SWINGS, SLIDES, MOTION SPINNERS,
CLIMBERS, TRAILS, ROLLER COASTERS, CIRCULAR RIDES,
FAMILY RIDES, TRANSPORTATION RIDES, WATER RIDES,
EXTREME THRILL RIDES, DARK RIDES, KIDDIE RIDES ...



8. CIRCUS

VARIOUS EQUIPMENT USED FOR CIRCUS PERFORMANCE SUCH AS ACROBATIC EQUIPMENTS, BALANCE LADDERS, ROLLA BOLLA, MINI CYCLES, SLACK LIVES, TRICK LIVES, AERIAL LYRA HOOP, JUGGLING CLUBS, AERIAL TRAPEZE BAR, POGO STICK, DRAGON CANE, HANDSTAND CANES, ARM BALANCE CANES, FIRE EATING STICKS, JUGGLING BALLS AND ACROBATIC EQUIPMENTS



9. SPORTS BROADCASTING

DIFFERENT EQUIPMENT FOR SPORTS BROADCASTING SUCH AS CAMERAS, AUDIO MIXTURES, MICROPHONES, VIDEO SWITCHERS, REPLAY SYSTEMS, GRAPHICS GENERATORS, TELEPROMPTERS, HEADSETS, INTERCOMS, WIRELESS, PORTABLE FILED MONITORS, EDITING SOFTWARE....



10. SPORTS INFRASTRUCTURE

STADIUM, PLAYGROUNDS, GOLF COURSE, SWIMMING POOLS, SPORTS TRACKS, ARENA, BANDY FIELD, BASEBALL PARK, BILLIARD HALL, BULLRING, GYM, HORSE RACING VENUES (HIPPODROME), ICE HOCKEY ARENA, MOTORSPORT VENUES (AUTODROME), SHOOTING RANGE, SPEED SKATING RINK, VELODROME



11. SPORTS FLOORING

DIFFERENT TYPE OF MATERIALS SPORT FLOORING SUCH AS NATURAL GRASS, ARTIFICIAL GRASS, ASTRO TURF, SYNTHETIC (POLYURETHANE ATHLETIC FLOORING, WOOD, RUBBER, ACRYLIC, CLAY, CONCRETE AND MAPLE HARDWOOD.



12. SPORTS LIGHTING

DESIGNING, IMPLEMENTING AND MAINTAINING LIGHTENING SYSTEM BASED ON THE REQUIREMENT DIFFERENT GAMES AND DIFFERENT LOCATIONS.



13. SPORTS ACOUSTICS

DESIGNING, IMPLEMENTING AND MAINTAINING SOUND
SYSTEM BASED ON THE REQUIREMENT DIFFERENT
GAMES AND DIFFERENT LOCATIONS.



14. SPORTS VEHICLES

VARIOUS VEHICLES USED FOR MOTOR SPORTS, AERO SPORTS AND WATER SPORTS SUCH AS SPORTS CYCLES, BIKES, CARS, TRUCKS, LAWN MOWERS, SNOW BIKES AND BOATS.



15. SPORTS TECHNOLOGY

VARIOUS TECHNOLOGY USED IN SPORTS FOR MAKING SPORTS MORE ACCURATE AND INTERESTING SUCH AS TIMING SOLUTIONS, HAWKEYE TECHNOLOGY, HOTSPOT, GOAL LINE TECHNOLOGY, WAGON WHEEL, PHOTO FINISH, RFID CHIPS, HANS DEVICE, SNICK-O-METER, SPIDER CAM, VANISHING SPRAY, BIOMECHANICAL ANALYSIS AND AUTO LIGHTING SYSTEM



16. TOYS & PLAYTHINGS

DIFFERENT TYPES OF TOYS AND PLAY THINGS INCLUDING MONTESSORI TOYS, CONSTRUCTION TOYS, PUZZLES, GAMING BOARDS, PLAYING CARDS, KITCHEN TOYS, RUBIK'S CUBE, REMOTE CONTROL TOYS....



17. SPORTS SEATING

DIFFERENT TYPE OF SEATS USING IN SPORTS AREAS INCLUDING BLEACHERS AND BENCHES, AND STYLE OF SEATS SUCH AS FLOOR MOUNTED, RISER MOUNTED, TIER MOUNTED, FOLDING SEATS, RETRACTABLE SEATS...



SPORTS ENGINEERING EDUCATION

IN INDIA, **SPORTS & MANAGEMENT RESEARCH INSTITUTE (SMRI)** OFFERS 6 MONTHS VALUE ADDED SPORTS ENGINEERING COURSE FOR ENGINEERING GRADUATES OF ALL STREAMS.

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